

# Zach Duer

Promotion and Tenure Dossier

Assistant Professor, School of Visual Arts

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## **I. Executive Summary**

### **Education**

- 2014 M.F.A., Kinetic Imaging, Virginia Commonwealth University, Richmond, VA
- 2009 M.A., Music Composition, Mills College, Oakland, CA
- 2007 B.M., Music Composition, Minnesota State University Moorhead, Moorhead, MN  
*summa cum laude*

### **Professional Appointments**

- 2017 - pres. Assistant Professor, School of Visual Art, Virginia Tech, Blacksburg, VA
- 2016 - 2017 Immersive Environment Specialist, Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA
- 2013 - 2015 Instructor, Virginia Commonwealth University, Richmond, VA

### **Selected International and National Performances, Exhibitions, and Screenings**

- 2022 *Sound and Music Computing Festival (SMC-22)*, Saint-Étienne, France.
- 2022 *Noise Floor*, Cadman Studios, Staffordshire University, Stoke-on-Trent, England.
- 2022 *Society for ElectroAcoustic Music in the United States National Conference*, Kalamazoo, MI.
- 2022 *Dance Camera Pandemia / Dance Camera Istanbul*, Istanbul, Turkey, online.
- 2021 *15<sup>th</sup> International Symposium on Computer Music Multidisciplinary Research*, Tokyo, Japan, online.
- 2021 *18<sup>th</sup> Brazilian Symposium on Computer Music*, Recife, Brazil.
- 2021 *Seoul International Computer Music Festival*, Seoul, South Korea.
- 2021 *San Francisco Dance Film Festival*, San Francisco, CA.
- 2021 *#social*, Czong Institute for Contemporary Art, Gimpo, South Korea.
- 2021 *Sans Souci Festival of Dance Cinema*, Boulder, CO.
- 2021 *Screen Dance International*, online.
- 2021 *Festival de Cine-Arte en la Frontera, 11<sup>th</sup> Edition*, San Cristóbal, Venezuela.
- 2021 *International Computer Music Conference 2021*, online.
- 2021 *Experimental Dance & Music Film Festival*, Carlton Cinema, Toronto, Canada and LA LIVE Regal Cinemas, Los Angeles, CA.
- 2021 *Red Rock ScreenDance Film Festival*, Electric Theater, St. George, UT.
- 2021 *New York City Electroacoustic Music Festival*, online.
- 2021 *Society for Electroacoustic Music in the United States (SEAMUS) Virtual National Conference*, online.
- 2021 *DANCINEMA*, online.
- 2021 *AltFF Alternative Film Festival 2021 Spring Edition*, online.
- 2021 *IEEE 6<sup>th</sup> VR Workshop on Sonic Interactions for Virtual Environments 2021 (SIVE 2021)*, online.

- 2020 *7<sup>th</sup> ACM SIGPLAN International Workshop on Functional Art, Music, Modelling and Design*, Jersey City, NJ, online.
- 2020 *SIGGRAPH 2020*, Washington D.C, online.
- 2020 *Artist Statement #5*, Czong Institute for Contemporary Art, Gimpo, South Korea.
- 2020 *Conference for Research on Choreographic Interfaces*, Providence, RI.
- 2019 *6<sup>th</sup> International Conference on Movement and Computing*, Tempe, AZ.
- 2019 *International Conference for Auditory Display 2019*, Newcastle-upon-Tyne, UK.
- 2019 *ACCElerate: ACC Smithsonian Creativity and Innovation Festival 2019*, Smithsonian National Museum of American History, Washington D.C.
- 2019 *Practicing Presence Festival*, Northampton, MA.
- 2018 *New Interfaces for Musical Expression*, Virginia Tech, Blacksburg, VA.
- 2018 *Intersections: 16<sup>th</sup> Biennial Symposium for Art and Technology*, Connecticut College, New London, CT.
- 2018 *Madatac 09\_2018*, Madrid, Spain.
- 2018 *Alliance for the Arts in Research Universities National Conference*, University of Georgia, Athens, GA.
- 2017 *3<sup>rd</sup> Electroacoustic Music Festival Ecos Urbanos*, Tecnológico de Monterrey and the Superior School of Music, Mexico City, Mexico.

### **Publications in Academic and Professional Journals/Magazines**

- 2020 Duer Z., Ogle T., Hicks D., Fralin S., Tucker T., Yu R. Making the Invisible Visible: Bringing to Light the Hidden Histories of the World War I Tunnels at Vauquois Through a Hybridized Physical and Virtual Reality Exhibition. *IEEE Computer Graphics and Applications*, Vol. 40 No. 4, pp. 39-50.
- 2018 Duer Z., Piilonen L., Glasson G.E. Belle2VR: A Virtual Reality Visualization of Subatomic Particle Physics in the Belle II Experiment. *IEEE Computer Graphics and Applications*, Vol. 38 No. 3, pp. 33-43.

### **Selected Conference Papers and Presentations**

- 2019 Duer Z., Hardwig S. *Body, Full of Time*. Border Control, The New Media Caucus Symposium. Ann Arbor, MI.
- 2019 Duer Z. *Educational Platforms for Immersive Student-Driven Learning*. College Art Association 2019 Annual Conference. New York, NY.
- 2018 Duer Z., Piilonen L., Glasson G.E. *Belle2VR – A Virtual Reality Visualization of Subatomic Particle Physics in the Belle II Experiment*. IEEE Vis 2018, Berlin, Germany.
- 2018 Yu R., Duer Z., Ogle T., Bowman D., Tucker T., Hicks D., Choi D., Bush Z., Ngo H., Nguyen P., Liu X. *Experiencing an Invisible World War I Battlefield Through Narrative-Driven Redirected Walking in Virtual Reality*. IEEE VR 2018, Reutlingen, Germany.
- 2017 Duer Z., Piilonen L., Glasson G.E. *Belle2VR – A Virtual Reality Visualization of Subatomic Particle Physics in the Belle II Experiment*. IEEE Vis 2017, Phoenix, AZ.

## External Grants

- 2021 - \$30,000 – Experiencing Civil War History Through Augmented Reality:  
2022 Soldiers, Civilians, and the Environment at Pamplin Historical Park. National Endowment for the Humanities.
- 2021 \$5,000 – Nomadic Performance Technologies for Dance-Making in the 21<sup>st</sup> Century. Digital Matters Exhibition/Performance Faculty Grant, University of Utah.

## Selected Internal Grants

- 2022 - \$21,628 – Digital Games and Interactive Curriculum. Major SEAD Grant, Institute  
2023 for Creativity, Arts, and Technology.
- 2020 - \$25,000 – Viewfinder: Engaging Bystanders in VR-based Interactive  
2021 Media Using Auxiliary Viewing Devices. Major SEAD Grant, Institute for Creativity, Arts, and Technology.
- 2019 - \$11,400 – Body, Full of Time. Major SEAD Grant, Institute for Creativity,  
2020 Arts, and Technology.
- 2018 \$20,000 – Pathways Grant Program.
- 2017 \$20,000 – Immersive Music Performance and Video Projection Mapping. Major SEAD Grant, Institute for Creativity, Arts, and Technology.

## Summary of Research Accomplishments

Performances, Exhibitions, Screenings	65
International	29
National	20
Regional	1
Local	15
Peer-reviewed publications	2
Conference presentations	10
International	4
National	4
Regional	1
Local	1
Internal Funding Amount	\$145,828 (\$40,459 responsibility)
External Funding Amount	\$35,000 (\$5,250 responsibility)

## Summary of Teaching and Service

Courses taught	29
Overall teaching effectiveness average	5.68 / 6.00
Independent studies	11
PhD committees	2
MFA committees	18
BFA committees	19
University committees	8
College committees	1
School of Visual Arts committees	5

### **III. Candidate Statement**

My research and creative work interrogates the intersection of contemporary visual media technologies with music, collage, and the human body. I treat visual media as musical materials. Musical principles of melody, harmony, rhythm, and temporal form are applied to visual principles of line, color, rhythm, and space. These connections are sometimes direct, and sometimes circuitous and suggestive. My work is adjacent to the field of visual music - a locus of artistic research into the cross-mappings of visual and musical elements. Considered this way, "music" becomes a creative approach that can be applied across media. Visual music artworks are often abstract with no representational references to real objects. My work extends the field by maintaining the creative formal approaches of music composition while incorporating representational imagery such as collaged materials and digital representations of human bodies and choreographic movement. To create the work, I integrate novel technologies such as motion capture, virtual reality (VR), and videogame engines, which speak to the mediated condition of contemporary human experience.

At Virginia Tech, I am part of both the Creative Technologies program in the School of Visual Art as well as the Creativity and Innovation (C+I) cluster of interdisciplinary faculty hired with the broad goal to bridge domains of knowledge and research practice. I collaborate with faculty and students from across the university to engage in my visual and musical research, as well as to develop virtual educational platforms. The creation of these platforms utilizes many of the same technical skills and relationships to new technologies as my primary research, but applies them to creating interactive learning environments. These environments visualize history and science in order to educate students and the community.

In alignment with the Beyond Boundaries vision that guides transdisciplinary research at Virginia Tech, I collaborate with musicians, dancers, poets, physicists, historians, biomedical engineers, computer scientists, and epidemiologists. Because of the range of my work and the variety of methodologies used, my collaborators and I conduct and communicate our research in many ways. Video screenings, multimedia performances, art gallery exhibitions, history and science museum exhibitions, journal papers, conference presentations, and VR software products all stand equally as modes of research practice and dissemination.

#### **Creative Research**

The interdisciplinary art form of visual music bridges the visual and musical arts, and requires knowledge and skills from both. My training includes a formal education in both music composition and visual art, infused with the use of contemporary technologies throughout. Within the field of visual music, the application of musical principles to formal visual elements is usually done with abstract imagery that eschews representation. Traditionally, lines, shapes, and textures are mapped, either directly or indirectly, onto musical events or ideas. My research broadens the field of visual music by using representational imagery to explore these mappings. Whether I am working with video collage or digitized bodies and movement, the formal approaches of music often result in the abstraction of these representational materials.

Choreographic digital art – art work with digital representations of the human body and movement – is a primary medium for my research in visual music. My collaboration with movement artist and Virginia Tech performing arts faculty Scotty Hardwig focuses on the relationship between physical and digital versions of the embodied self. In this work, I explore the morphogenetic potential of the hyperreal human body – the extension of the human form into virtual space where the restrictions of the physical do not apply. I digitize movement and the physical body through motion capture, process it through custom software, and mold the

results into performances of projection-mapped dance, video, and VR. The human body in this extended condition is formally abstracted as it twists into impossible contortions or is reproduced digitally en masse. Yet, these representations of movement remain a forceful reminder of the physicality and presence of the human dancer.

In the virtual choreographic artwork *Time Garden*, I collaborated with Hardwig and Virginia Tech music faculty Charles Nichols to create virtual representations of movement and the body that are mapped onto music. *Time Garden* is a suite of six video pieces with one more still in development. In the virtual space, I imagine a cybernetic future in which our bodies, minds, and identities become chimeric and fragmented across physical and digital planes. Landscapes made out of virtual 3D ribcages, skulls, internal organs, and lymph nodes are populated by an army of dancing avatars. *Time Garden* explores new territory in the hybrid field of digital choreography and visual art by inquiring how the cybernetic shift in our society affects our human experience, embodied perception, and relationships. At the same time, it also extends visual music by creating new systems for translating abstracted, digitized movement into sound. The positions and rotations of limbs relative to one another drive the music synthesis, creating a direct connection between choreographic, visual, and musical gestures. These video art works, along with the video *Mass* which was created at the same time and with the same processes, have been screened 19 times at international-scope film festivals and conferences, including the prestigious **San Francisco Dance Film Festival** (USA), the **International Computer Music Conference** (online), and **Screen Dance International** (online) (see V.B.8.).

Hardwig and I also collaborated to create *Body, Full of Time*. This choreographic performance preceded *Time Garden*, examining similar themes but in a live, physical, theatrical space. Through this project, I mentored three graduate students to create music, lighting, and set design, resulting in an independent study and an MFA thesis. We performed the work several times, including at the **International Conference on Movement and Computing** (USA) (see V.B.8.), before COVID-19 ended our tour. I also presented a paper at **Border Control, the 2019 New Media Caucus Symposium and Exhibition** (USA) (see V.B.7. 2019 Duer et al), a leading symposium for new media art. The production of *Body, Full of Time* and *Time Garden* were funded by Virginia Tech Institute for Creativity, Arts, and Technology **SEAD Grants** (see V.C.).

We are now working on a performance, *Daedalus Dreams*, for solo dancer and drone (unmanned aerial vehicle). We won a **Digital Matters Grant** from the University of Utah (see V.C.) to fund a week of residency researching the use of drones to create a flexible, light-weight performance medium. Emerging from the residency research, our new performance work highlights a future direction of agile and portable performance infrastructure. The work aesthetically examines the raw materials of the drone: its wind, light, and software navigation system. This work will be premiered in Fall 2022 at Virginia Tech (see VIII.A.).

Besides choreographic digital art, the other primary medium for my visual music research is digital collage. Collage is not a traditional medium for visual music, but I have developed a novel technique for merging existing musical and visual media into new unified entities that oscillate between representation and abstraction. The source materials, rather than the traditional collage materials of print media such as magazines and newspapers, are extracted short clips of audio and video created by others, such as film, TV, and music. I have defined a unique space by emphasizing the idiomatic stylistic characteristics of the media clips instead of using them to reference their original content or the social implication of the work from which they were derived. The collaged media represent themselves, as media entities, bringing in tow all of the minutiae of their recording technology, intentionality, and subject material. An example of this is evident in the work *nothings\_nomeanings*. A video clip from a documentary on birds does

not just present the imagery of the bird; it contains within it the documentary style, the film camera used, the director's intention to communicate the bird's peaceful life, our encultured attitudes towards birds, the physical form of the bird, and of course the bird itself. It is then mixed together with dozens or hundreds of other clips that each bring their own richness. This work has been screened and exhibited 8 times nationally and internationally including the **Czong Institute for Contemporary Art** (South Korea), **MADATAC** (Spain), and **Ecos Urbanos** (Mexico) (see V.B.8.). This approach to video collage is integrated into many of my other works such as *Grey Patterns*, *Cloud City Collage*, *Badstar*, and *What Bends*, resulting in 6 further screenings and performances, including 2 at an international scope (see V.B.8.). I am continuing to research new approaches to collage, including the development of a novel technique using photogrammetry technology to capture 3D interactive virtual environments, such as videogames, and reprocess them as the materials for collaged virtual spaces.

I use the same materials, tools, and processes to collaborate with interdisciplinary teams to create educational virtual environments. We research and develop new techniques to present scientific information and historical narratives through embodied virtual experiences, developing educational platforms for active learning. I use my facility with contemporary technologies to create our software, acting as both an artist and an engineer. I have collaborated with a number of faculty, including Todd Ogle from the university library's ARIES lab, historian and educator David Hicks, Doug Bowman in computer science, and physicist Leo Piilonen.

My first educational virtual environment, *Belle2VR*, is a VR scientific visualization of a subatomic particle physics supercollider. I collaborated with physics and education faculty and students to create an immersive environment in which students could physically walk around with VR headsets on and view a virtual representation of a particle physics supercollider and its subatomic particle collisions. This project was met with excitement by physicists from around the world, and was received in the data visualization community as an excellent demonstration of the power of VR visualization for scientific research. Besides the application itself, it resulted in a publication in **IEEE Computer Graphics and Applications** (see V.B.6. 2018 Duer et al) and several paper presentations at leading international conferences on both physics and visualization including **Computing in High Energy and Nuclear Physics** and **IEEE VIS** (see V.B.7. 2020 Piilonen et al, 2018 Duer et al, 2017 Duer et al).

Immersive environments are also effective in history education. *Exploring the World War I Tunnels of Vauquois* is a VR experience that encourages users to empathize with the human experience of World War I tunnel warfare. I wrote custom software allowing participants to physically walk through and touch a reconstruction of a tunnel while viewing it through a headset as a virtual representation of how it might have looked during WWI. This experience was exhibited at **SIGGRAPH 2020**, and the **Smithsonian National Museum of American History**. Scholarship on the research was published in **IEEE Computer Graphics and Applications** (see V.B.6. Duer et al) and presented at the **College Art Association**, **IEEE VR**, and the **National Council for the Social Studies** (see V.B.7. 2018 Yu et al, 2019 Duer, 2018 Hicks et al). Last year, we won a \$30,000 **National Endowment for the Humanities Discovery Grant** to investigate the potential of a virtual learning environment for civil war history at the Pamplin Historical Park in eastern Virginia (see V.C.). This year, we submitted a follow-up application for \$100,000 to build a prototype (see VIII.A.).

## **Interdisciplinary Education**

I integrate my research with my teaching through classes such as Creative Code, Visual Music, and Movement and Media. My primary goal is to provide students with a framework that enables

them to teach themselves the technical skills, conceptual background, and creative approaches to make their artwork. This is evidenced through consistently high SPOT scores (see IV.J.) and positive qualitative SPOT feedback. I have sought out opportunities to improve my teaching by attending a certification program in teaching and learning (see IV.A.) and multiple education design lectures and clinics (see IV.M.). I frequently involve both graduate and undergraduate students in hands-on education by funding them to assist in the creation of my work (see V.C., 2020 VRViewfinder, 2020 Process and Interface, 2018 Body Full of Time, 2017 Embodied Virtual Reality, 2017 Immersive Music Performance). Outside the classroom and funded projects, I have also acted as the chair of 7 MFA and PhD committees, as a member of 11 others, and as the chair of 19 BFA thesis committees (see IV.D).

I choose to play a significant role in renovating existing classes and curricula as well as developing new classes and degree programs. With an almost complete faculty turn over in my home program of Creative Technologies and many new faculty hired in the C+I interdisciplinary area, there was a need for imagining new curricula. Upon entering the university, I took the lead in developing a curriculum for C+I. I procured a \$20,000 **Pathways Grant** (see V.C.) to lead a team of faculty from multiple colleges in the development of a Pathways minor, Design Tech, and piloted the introductory course Play to Make. I led one working group and acted as a member of another for the Virginia Tech Center for Human Computer Interaction, leading to the imminent proposal of a one-year interdisciplinary professional master's program (see VII.B.). Within the Creative Technologies program, we are creating a new vision and long term curricular plan for the undergraduate and graduate programs. I spearheaded a push to overhaul our undergraduate curriculum creating a two-year curriculum plan that fits our student's needs and passing several new courses through governance. I have also contributed to developing our MFA program by passing the course ART 5534 Graduate Art Critique (see IV.I.)

### **Service**

I use my experience as a professional artist and educator to serve the university and my community. Within the university, I have served on four faculty search committees (three outside my department), four interdisciplinary curriculum committees (leading two), and several departmental and college committees. I built a new computer lab by manually assembling and installing computers, saving hundreds of thousands of dollars over the original bid. For my national community of artists, I serve on the board and the communications committee of the New Media Caucus, a professional art organization. I am also co-chairing the steering committee organizing *Future Bodies, the 2022 New Media Caucus Symposium and Exhibition* hosted at Virginia Tech in September 2022. This event will be a transformative experience for our students to work with and see the research of professionals in the field from across the country. I also serve on the editorial board of *GroundWorks*, a publication promoting interdisciplinary arts-integrated research.

### **Prospective**

I have several ongoing and forthcoming projects. Hardwig and I will perform *Daedalus Dreams* in Fall '22. My history education team has submitted a follow up NEH grant to continue our work prototyping a virtual environment for civil war history education at Pamplin Park. *Time Garden* remains in active development and the new videos has been submitted to numerous film festivals. I am also currently experimenting with machine learning to sequence and layer collage imagery and to choreograph digitized movement, researching the potential applications and pitfalls of this new technology in creating visual music art work.



## A. COVID Statement

March 2020 coincided with the middle of my fourth year as an Assistant Professor at Virginia Tech. I am incredibly fortunate to have been only mildly affected by the COVID-19 pandemic, personally and professionally. The tour for my performance work *Body, Full of Time* was starting to kick into gear, with three performances and workshops scheduled for June 2020. All of these were cancelled. The potential for any additional performances of this work, which we hoped to tour extensively, was immediately ended. Two performances of *Or Be Forever Fallen* were also cancelled, as was one conference. I have not been part of a single performance since then. We continue to cancel and delay performances as the Delta and Omicron variants sweep through our communities. This year, I was working together with Scotty Hardwig to produce a collaborative performance production with the Roanoke Ballet Theater and our Movement and Media class to be debuted in March 2022. Again, we had to cancel the performance due to the dancers all getting COVID and not being able to rehearse all together for more than two months.

The enforced changes of the pandemic created some unexpected opportunities. *Time Garden* was originally conceptualized as a virtual reality work, which would be experienced in galleries and performance spaces with head mounted displays. This became impossible during the COVID quarantine, and remains difficult today. Our choice to redirect this work to become a series of videos paid dividends, resulting in numerous screenings at film festivals and conferences around the world. Of course, almost all these events took place online, decreasing opportunities for networking and informal sharing, but this is true for everyone in all disciplines.

The pandemic and resulting quarantine also made it more difficult for me to produce new work in 2020, due to the additional strain of young children attending remote elementary school, and the difficulty of collaborating online with movement and sound. However, the following year was one of my most productive since so many projects had a year of slow progress from which to grow.

#### **IV. Teaching and Advising Effectiveness**

Courses taught (IV.B.)	29
Independent studies (IV.B.)	11
Non-credit courses / workshops / guest lectures / critiques (IV.C.)	37
PhD committees (IV.D.)	2 (1 chaired)
MFA committees (IV.D.)	18 (6 chaired)
BFA committees (IV.D.)	19 (19 chaired)
Courses written and passed (IV.I.)	4
SPOT overall effectiveness average (IV.J.)	5.68 / 6.0
Demonstrated efforts to improve teaching (IV.M.)	7

#### **A. Recognition and awards for teaching or advising effectiveness**

- 2020 Thank a Teacher Letter, Center for Excellence in Teaching and Learning, Virginia Tech, Blacksburg, VA
- 2019 Thank a Teacher Letter, Center for Excellence in Teaching and Learning, Virginia Tech, Blacksburg, VA
- 2018 *Certificate for Excellence in Teaching and Learning*, Principles of Effective Teaching Certificate Program, The Center for Excellence in Teaching and Learning, Virginia Tech, Blacksburg, VA

#### **B. Chronological list of courses taught during the reporting period**

Courses	29
Independent studies	11
Total students taught	320

Term	Course Number	Course Name	Credit Hours	Class Size
Spring 2022	UH 3504	Movement and Media <sup>1</sup>	3	7
Spring 2022	ART 5974	Graduate Independent Study: Visual Instruments	3	1
Fall 2021	ART 3114	Intro to Creative Code	3	20
Fall 2021	ART 3594	Visual Programming	3	14
Fall 2021	ART 5604	Visual Programming	3	1
Fall 2021	ART 5714	Intro to Creative Code	3	3

Fall 2021	ART 5974	Graduate Independent Study: Coding for Installation Art	3	1
Spring 2021	ART 3114	Intro to Creative Code	3	13
Spring 2021	ART 5534	Graduate Art Critique	3	8
Spring 2021	ART 4974	Independent Study: Programming animation trees	3	1
Fall 2020	ART 3114	Creative Code	3	10
Fall 2020	ART 4514	Visual Music	3	13
Fall 2020	ART 5974	Graduate Independent Study: Creative Code	3	3
Fall 2020	ART 5974	Graduate Independent Study: Visual Music	3	1
Summer 2020	ART 4974	Independent Study: 3D Post Processing Effects	3	3
Summer 2020	GRAD 7994	Research and Dissertation	9	1
Spring 2020	ART 3504	Creative Code	3	18
Spring 2020	ART 4894	Senior Studio	3	18
Spring 2020	ART 5714	Creative Code Art & Design	3	3
Spring 2020	ART 5974	Graduate Independent Study: Unity Virtual Visual Canvas	3	1
Spring 2020	ART 5974	Graduate Independent Study: Narrative Virtual Environments	3	1
Fall 2019	ART 3504	Creative Code	3	12
Fall 2019	ART 4894	Senior Studio	3	16
Fall 2019	ART 4974	Independent Study: History of 3D Graphics	3	1
Fall 2019	ART 4974	Independent Study: Character Building in Maya	3	1
Fall 2019	ART 5604	Creative Code	3	9
Spring 2019	ART 3114	Creative Code	3	1
Spring 2019	ART 3504	Creative Code	3	12

Spring 2019	ART 5524	Graduate Seminar	3	6
Spring 2019	ART 5714	Creative Code Art & Design	3	2
Fall 2018	ART 1114	Creative Technologies + Experiences: Play to Make <sup>2</sup>	3	22
Fall 2018	ART 4504	Advanced Creative Code	3	11
Fall 2018	ART 5604	Advanced Creative Code	3	6
Spring 2018	ART 3504	Creative Code	3	18
Spring 2018	ART 3504	Creative Code	3	13
Winter 2018	UH 3004	Immersive Virtual Environments <sup>3</sup>	3	10
Winter 2018	ART 5974	Graduate Independent Study: Immersive Environments	3	1
Fall 2017	ART 3704	Intro to Creative Code	3	13
Fall 2017	ART 3704	Intro to Creative Code	3	19
Fall 2017	ART 5704	Intro to Creative Code	3	6

<sup>1</sup> Co-taught with School of Performing Arts faculty Scotty Hardwig

<sup>2</sup> Co-taught with Architecture faculty Katie MacDonald

<sup>3</sup> Co-taught with ICAT A/P faculty Tanner Upthegrove

**C. Chronological list of non-credit courses, workshops, and other related outreach and/or extension teaching**

**Outside Department**

2022 Guest lecture – MUS 3066: Computer Music. Instructor of Record: Charles Nichols. Class size: 10. (April 7)

2020 Collaborative course assignment – ART 3114: Creative Code and MUS 2065: Music Composition. *My students collaborated with Charles' Nichols music composition students in pairs on an interdisciplinary final project to create a piece of visual music.*

2020 Guest lecture – MUS 2065: Music Composition. Instructor of Record: Charles Nichols. Class size: 9. (October 8)

2019 Guest lecture – MUS 3066: Computer Music. Instructor of Record: Charles Nichols. Class size: 18. (February 12)

- 2019 Collaborative course assignment – ART 3504: Creative Code and MUS 3065: Computer Music and Multimedia. *My students collaborated with Charles' Nichols computer music students in pairs on an interdisciplinary final project to create procedural artworks. My students were responsible for the visual and his students were responsible for the music. The best 3 pieces were selected to be shown in the DISIS II concert in the Moss Arts Center Cube on May 8, 2019, at Virginia Tech.*
- 2019 Guest lecture – CS 4084: 3D Experiences. Instructor of Record: Doug Bowman. Class size: 20. (February 28)
- 2017 Guest lecture – MUS 3065: Computer Music and Multimedia. Instructor of Record: Charles Nichols. Class size: 20. (September 12)
- 2017 Guest critique – ITDS 2044: Interior Design I. Instructor of Record: Helene Renard. Class size: 36. (November 1)

### **Inside Department**

- 2021 Class exhibition – ART 4514: Visual Music. *I organized and installed (with library exhibition coordinator Scott Fralin) an exhibition of 11 student art works that were collaborations with Charles Nichols' students in MUS 2065: Music Composition. The installation was in the Virginia Tech Newman Library. (January-March)*
- 2019 Guest lecture - ART 1114: Play to Make. Instructor of Record: Tacie Jones. Class size: 20. (October 8)
- 2018 Class exhibition – ART 3504: Creative Code. *I organized and installed (with library exhibition coordinator Scott Fralin) an exhibition of 34 student art works from two sections of the course I taught. The installation was in the Virginia Tech Newman Library. (March-May)*
- 2017 Guest lecture – ART 4894: Senior Studio. Instructor of Record: Simone Paterson. Class size: 30. (October 30)
- 2017 - pres. Guest critique – ART 4894. *I attended more than 25 Senior Studio critiques for Studio and Creative Technologies undergraduate senior School of Visual Arts students enrolled in ART 4894.*

**D. Completed theses, dissertations, other graduate degree projects, major undergraduate research projects, and honors theses directed**

PhD Committees	2 (1 chaired)
MFA Committees	18 (6 chaired)
BFA Committees	19 (19 chaired)

**PhD**

2018 - *PhD Dissertation Advisor*, Woohun Joo, Interdisciplinary PhD.  
2022 Dissertation Title: *Experiential Graphic Sonification for Visual and Auditory Communication Design and Musical Expression*

2018 - *PhD Dissertation Chair*, Michael Rhoades, Interdisciplinary PhD.  
2020 Dissertation Title: *Composing Holochoric Visual Music: Interdisciplinary Matrices*

**MFA**

2022 *MFA Thesis Chair*, Adam Eddy, MFA Creative Technologies.  
Thesis Title: *Liminal Perspective*

2022 *MFA Thesis Chair*, Joe Link, MFA Creative Technologies.  
Thesis Title: *Ocean of Objects*

2022 *MFA Thesis Advisor*, Nicholas Corrigan, MFA Creative Technologies.  
Thesis Title: *Transitions of Light: Creating in the Post Digital, Approaching Post Pandemic*

2021 *MFA Thesis Advisor*, Boyoung Lee, MFA Creative Technologies.  
Thesis Title: *Breeze*.

2020 - *MFA Thesis Chair*, Tianyu Ge, MFA Creative Technologies.  
2021 Thesis Title: *Encyclopaedia Mundi: A digital experience*

2020 - *MFA Thesis Advisor*, Caleb Flood, MFA Creative Technologies.  
2021 Thesis Title: *Desubjectification and Ritual Process*

2020 - *MFA Thesis Advisor*, Jasmine Shah, MFA Creative Technologies.  
2021 Thesis Title: *The Joys of Gardening*

2020 *MFA Thesis Advisor*, Renee Alarid, MFA Creative Technologies  
Thesis Title: *Propolis: Immersive Environment*

2019 *MFA Thesis Chair*, Hannah Comstock, MFA Creative Technologies.  
Thesis Title: *Deivisceris*

2019 *MFA Thesis Chair*, Daniel Monzel, MFA Creative Technologies. Thesis Title: *Fabricated Preservation*

- 2019 *MFA Thesis Advisor*, David Franusich, MFA Creative Technologies.  
Thesis Title: *Down Stream [Appalachia]*
- 2019 *MFA Thesis Advisor*, Jasmine Edison, MFA Creative Technologies.  
Thesis Title: *Sankofa: Artist As Historian, Scavenger, and Storyteller*
- 2019 *MFA Thesis Advisor*, Mahshid Gorjian, MFA Creative Technologies.  
Thesis Title: *The Battle of the Kings*
- 2018 - *MFA Thesis Advisor*, Carter Eggleston, MFA Creative Technologies.  
2019 Thesis Title: *Plasticene*
- 2018 - *MFA Thesis Advisor*, Xindi Liu, MFA Creative Technologies. Thesis Title:  
2019 *The Ashes and the Portal*
- 2017 - *MFA Thesis Chair*, Lucas Freeman, MFA in Creative Technologies.  
2018 Thesis Title: *Alchemically: An Educational Role-Playing Game.*
- 2017 - *MFA Thesis Advisor*, Lei Zhang, MFA in Creative Technologies. Thesis  
2018 Title: *Immunology Virtual Reality: Exploring Educational VR Experience Design for Science Learning.*
- 2017 - *MFA Thesis Advisor*, George Hardebeck, MFA in Creative Technologies.  
2018 Thesis Title: *Pulse 63: Live Streaming and Architectural Projection Mapping at Moogfest 2018.*

## **BFA**

Undergraduate Thesis Committee Chair for the following Senior Studio capstone projects as required for the Bachelor of Fine Arts degree, Creative Technologies concentration. In each case I served as chair for two semesters on practice-based research projects culminating in public exhibition and thesis document or website.

- 2021 - *Undergraduate Thesis Committee Chair*, Sam Lally, BFA Creative  
2022 Technologies. Thesis title: *ARTech*. Mentor for senior thesis document, public exhibition, and research in video feedback installation art with depth camera interactivity. Armory Gallery, Virginia Tech, Blacksburg, VA
- 2021 - *Undergraduate Thesis Committee Chair*, Andrew Cybak, BFA Creative  
2022 Technologies. Thesis title: *Unknown - Unknown*. Mentor for senior thesis document, public exhibition, and research 2D animation and narrative. Armory Gallery, Virginia Tech, Blacksburg, VA
- 2021 - *Undergraduate Thesis Committee Chair*, Bryan Snigur, BFA Creative  
2022 Technologies. Thesis title: *Untitled*. Mentor for senior thesis document, public exhibition, and research in unmanned aerial vehicles, video editing, and video installation. Armory Gallery, Virginia Tech, Blacksburg, VA
- 2021 *Undergraduate Thesis Committee Chair*, Noelle Badzik, BFA Creative  
Technologies. Thesis title: *Nerp*. Mentor for senior thesis document, public exhibition, and research in videogame development. Armory Gallery, Virginia Tech, Blacksburg, VA.

- 2020 - *Undergraduate Thesis Committee Chair*, Xzavier Cypress, BFA Creative  
2021 Technologies. Thesis title: *The Journey to Inspira*. Mentor for senior thesis document, public exhibition, and research in storytelling. Online exhibition.
- 2020 - *Undergraduate Thesis Committee Chair*, Brady Blauvelt, BFA Creative  
2021 Technologies. Thesis title: *Weathering Forest*. Mentor for senior thesis document, public exhibition, and research in immersive environments. Online exhibition.
- 2020 - *Undergraduate Thesis Committee Chair*, Daniel Gray, BFA Creative  
2021 Technologies. Thesis title: *untitled*. Mentor for senior thesis document, public exhibition, and research in abstract digital materials. Online exhibition.
- 2020 *Undergraduate Thesis Committee Chair*, Ross Walter, BFA Creative Technologies. Thesis title: *untitled*. Mentor for senior thesis document, public exhibition, and research in immersive environments. Online exhibition.
- 2019 - *Undergraduate Thesis Committee Chair*, Aidun Aurash, BFA Creative  
2020 Technologies. Thesis title: *Meat*. Mentor for senior thesis document, public exhibition, and research in videogame storytelling. Online exhibition.
- 2019 - *Undergraduate Thesis Committee Chair*, Hailey Hartigan, BFA Creative  
2020 Technologies. Thesis title: *A Fable for Tomorrow*. Mentor for senior thesis document, public exhibition, and research in animation. Online exhibition.
- 2019 - *Undergraduate Thesis Committee Chair*, Madison Hermann, BFA  
2020 Creative Technologies. Thesis title: *HPPD*. Mentor for senior thesis document, public exhibition, and research in animated documentary. Online exhibition.
- 2018 - *Undergraduate Thesis Committee Chair*, Tariq Rakha, BFA  
2019 Creative Technologies. Thesis title: *Fall*. Mentor for senior thesis document, public exhibition, and research in 3D modeling, animation, programming, and videogame storytelling. Armory Gallery, Virginia Tech, Blacksburg, VA.
- 2018 - *Undergraduate Thesis Committee Chair*, Tara Laughlin, BFA  
2019 Creative Technologies. Thesis title: *That's My Girl*. Mentor for senior thesis document, public exhibition, and research in projection art. Armory Gallery, Virginia Tech, Blacksburg, VA.
- 2018 - *Undergraduate Thesis Committee Chair*, Kyle Robey, BFA Creative  
2019 Technologies. Thesis title: *Abstract Factory*. Mentor for senior thesis document, public exhibition, and research in visual music, performance, and video. Armory Gallery, Virginia Tech, Blacksburg, VA.



- 2018 - *Undergraduate Thesis Committee Chair*, Rachel Oliu, BFA Creative Technologies. Thesis title: *Among Other Memories*. Mentor for senior thesis document, public exhibition, and research in augmented reality. Armory Gallery, Virginia Tech, Blacksburg, VA.
- 2017 - *Undergraduate Thesis Committee Chair*, Karsten Dees, BFA Creative Technologies. Thesis title: *Algorithmic Dance*. Mentor for senior thesis document, public exhibition, and research in procedural art and robotics. Armory Gallery, Virginia Tech, Blacksburg, VA.
- 2017 - *Undergraduate Thesis Committee Chair*, Michael Rhoades, BFA Creative Technologies. Mentor for senior thesis document, public exhibition, and research in 3D modeling, animation, and immersive holographics. Moss Arts Center, Virginia Tech, Blacksburg, VA.
- 2017 - *Undergraduate Thesis Committee Chair*, Vincent Riddell, BFA Creative Technologies. Thesis title: *The Green Stone*. Mentor for senior thesis document, public exhibition, and research in 3D modeling and animation. Armory Gallery, Virginia Tech, Blacksburg, VA.
- 2017 *Undergraduate Thesis Committee Chair*, Tyler Niskanen, BFA Creative Technologies. Thesis title: *Apparitions*. Mentor for senior thesis document, public exhibition, and research in 3D modeling and animation and virtual reality. Armory Gallery, Virginia Tech, Blacksburg, VA.

**E. Postdoctoral fellow training and research – N/A**

**F. Current positions held by the candidate's masters and doctoral recipients**

- 2022 Eddy, Adam (MFA). Assistant Professor, Columbia College – South Carolina.
- 2022 Zhang, Lei (MFA). Assistant Professor of Games and Interactive Media Design, Arkansas Tech University.
- 2021 Hardebeck, George (MFA). Producer, Ideum, Corrales, NM.
- 2021 Tianyu, Ge (MFA). Computer Science PhD candidate at Virginia Tech, Blacksburg, VA
- 2020 Rhoades, Michael (PhD). Audio/Visual Researcher at The Institute for Digital Intermedia Art, Ball State University, Muncie, IN.
- 2020 Freeman, Lucas (MFA). Quality Assurance, Epic Games, Raleigh, NC.

**G. Special achievements of current/former undergraduate and graduate students**

- 2021 Adam Eddy, Awarded 2021-2022 CAUS Student Initiated Research Grant. \$750. *Liminal Perspective – An Investigation of Pictorial Space in Still-Life Painting Using 3D Computer Graphics*. (Chair of MFA thesis committee, 2022).

- 2021 Tariq Rakha, Received MFA in Interactive Media & Game Development, Worcester Polytechnic Institute. Creative Technologies BFA, 2019. (Former chair of undergraduate thesis committee, 2019)
- 2021 Ross Walter, Awarded NASA internship, 2021. Creative Technologies BFA. (Chair of BFA thesis committee, 2020)
- 2020 Lucas Freeman, Hired by Epic Games, Quality Assurance Specialist, 2020. Creative Technologies MFA, 2018. (Chair of MFA thesis committee, 2018)
- 2020 Michael Rhoades, Paper published: *Exploring the Nexus of Holography and Holophony in Visual Music Composition* published in *the Leonardo Music Journal*, Vol 30, pp. 61-67. Individualized PhD, 2020. (Former chair of PhD committee, 2020)
- 2020 Jessica Robinson, Awarded NASA internship. Creative Technologies MFA, 2021. (Former member of MFA thesis committee, 2021)
- 2019 Jasmine Shah, Eric Schoenborn, Dash Elhauge, Awarded grant: *Zoologica Fantastica in the Mist: Bringing Borges' Mythological World to Mixed Reality*. Student SEAD Grant, Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA. \$1,000. Shah, Creative Technologies MFA, 2021 (Former member of MFA thesis committee). Schoenborn, Creative Technologies MFA, 2021 (Former Creative Code student). Elhauge, English MFA, 2022 (Former Creative Code student).
- 2019 Kyle Robey, Hired by ComicWOW, Video Editor, Timonium, MD. Creative Technologies BFA, 2019. (Former chair of undergraduate thesis committee, 2019)

#### **H. Current academic advising responsibilities – graduate and undergraduate**

- 2022 *MFA Thesis Advisor*, Nikita Shokhov, MFA Creative Technologies.  
Thesis Title: *Orientation Device*

#### **I. Course, curriculum, and program development**

*ART 1114 Play to Make: Introducing the Materials, Tools, and Processes of Creative Technologies + Experiences*

2018, course developed as part of Creative Technologies and Experiences Pathways minor.

Satisfies Pathways Concept 6a

Description: Transdisciplinary practice in an inclusive, collaborative environment, through the lens of creative technologies and experiences, to describe and evaluate the convergence between art, technology, and human experience in the arts, sciences, humanities, and engineering. Exploration of play for creation of ideas and artifacts (including, but not restricted to multimedia narratives, learning simulations, immersive/performative experiences, and data exploration). Inclusive collaboration with peers and practicing professionals in diverse fields. Critical consideration of creative technologies and the impacts on history, society, cultures, individuals, and

communities. Collaborative research, design, creation, and exhibition of a transdisciplinary project to identify and address a global challenge. Course contact to credit hour structure: Lecture (1H,1C), Lab (3L, 1C), Design Lab/Studio (2L, 1C). No prerequisites. (1H, 5L, 3C)

*ART 2434 Introduction to Creative Code*

2021, course developed as required course in new Creative Technologies BFA  
Satisfies Pathways Concept 5f

Description: Introduction to computer programming tools within a critical aesthetic context. Tools may include software such as Processing and Unity. Application of foundational programming techniques to artwork creation. Consideration of computational and quantitative technologies and processes ethically, culturally, and artistically. Algorithmic thinking, and examination of existing computer generated artworks to infer algorithmic basis. Consideration of the ethics of algorithmic systems in our culture and media. Course contact to credit hour structure: Design Lab/Studio. Pre: 1604. (5L, 3C)

*ART 3114 Creative Coding for Creativity and Innovation*

2018, course developed as part of Creative Technologies and Experiences  
Pathways minor.

Satisfies Pathways Concept 5f

Description: Introduction to computer programming tools within a critical aesthetic context. Creation and analysis of generative and algorithmic artwork as well as consideration of how works derived from logical rulesets, algorithms, and the artful application of randomness can communicate human feelings and ideas. Consideration of ethics of algorithmic systems in our culture and media, and creating art works to address those issues and influence opinion. Course contact to credit hour structure: Lecture (1H,1C), Lab (3L, 1C), Design Lab/Studio (2L, 1C). Pre: ART 1114. (1H, 5L, 3C)

*ART 5534 Graduate Art Critique*

2019, course developed to expand graduate offerings in the School of Visual Art.

Description: Graduate level presentation, analysis, and critique of art works and interdisciplinary artistically-led projects, including but not limited to video art, videogames, virtual reality and augmented reality environments, 3D animated short films, scientific visualization, socially engaged performance art, physical computing installations, digital fabrication and manufactured art, and graphic design. Informal and formal critiques performed by peers, guest faculty, and guest artists. May be repeated 3 times with different content for a maximum of 12 credits. Pre: Graduate standing. (3H, 3C).

## J. Student evaluations of instruction

Overall effectiveness average	5.68
Department average	5.29
College average	5.19

Term	Course	Class Size	Responders	Response Rate	Overall Effectiveness	Department Average	College Average
Spring 2022	UH 3504 Movement and Media	7	7	100%	6.00	5.31	5.41
Fall 2021	ART 3114 Intro to Creative Code	20	13	65%	5.92	5.24	5.17
Fall 2021	ART 5714 Intro to Creative Code	3	3	100%	6.00	5.24	5.17
Fall 2021	ART 3504 Visual Programming	14	9	64%	5.78	5.24	5.17
Spring 2021	ART 3114 Intro to Creative Code	13	8	62%	5.50	5.37	5.33
Spring 2021	ART 5534 Graduate Art Critique	8	6	75%	6.00	5.37	5.33
Fall 2020	ART 3114 Intro to Creative Code	14	11	79%	5.82	5.40	5.32
Fall 2020	ART 4514 Visual Music	15	12	80%	5.83	5.40	5.32
Spring 2020	ART 3504 Intro to Creative Code	19	11	58%	5.73	5.12	5.22
Spring 2020	ART 4894 Senior Studio	18	7	38%	5.57	5.12	5.22
Fall 2019	ART 3504 Intro to Creative Code	13	5	38%	4.80	5.27	5.15
Fall 2019	ART 5604 Intro to Creative Code	9	2	22%	6.00	5.27	5.15
Fall 2019	ART 4894 Senior Studio	16	11	69%	5.45	5.27	5.15
Spring 2019	ART 3504 Intro to Creative Code	17	11	59%	5.80	5.22	5.02

Spring 2019	ART 5524 Grad Studio	6	4	67%	6.00	5.22	5.02
Fall 2018	ART 1114 Play to Make	22	20	91%	4.75	5.29	5.10
Fall 2018	ART 4504 Advanced Creative Code	11	8	73%	5.63	5.29	5.10
Fall 2018	ART 5604 Advanced Creative Code	6	6	100%	5.83	5.29	5.10
Spring 2018	ART 3504 Intro to Creative Code	19	14	74%	5.71	5.26	5.01
Spring 2018	ART 3504 Intro to Creative Code	13	11	85%	5.82	5.26	5.01
Win 2018	UH 3004 Immersive Virtual Environ	11	8	73%	5.88	5.88	5.89
Fall 2017	ART 3704 Intro to Creative Code	16	4	25%	4.75	5.22	5.07
Fall 2017	ART 3704 Intro to Creative Code	18	7	39%	5.86	5.22	5.07
Fall 2017	ART 5704 Intro to Creative Code	6	2	33%	6.00	5.22	5.07

#### **K. Peer evaluations of instruction**

- 2021 ART 3114 Intro to Creative Code. Peer evaluation conducted by Rachel Lin Weaver, Assistant Professor, Chair of SOVA Creative Technology MFA Program. (November 11)
- 2018 ART 3504 Intro to Creative Code. Peer evaluation conducted by Thomas Tucker, Associate Professor, Chair of SOVA Creative Technology MFA Program. (August 15)
- 2017 ART 3704 Intro to Creative Code. Teaching evaluation conducted by Liesl Baum, Associate Director for Strategic Initiatives, Center for Excellence in Teaching and Learning. (September 21)

#### **L. Alumni evaluations of instruction – N/A**

#### **M. Demonstrated efforts to improve one's teaching effectiveness**

##### **Networked Learning Initiatives**

- 2018 *Course Design Clinic* (August 8)
- 2018 *Pathways Assessment: How to Prepare and Make the Most of the Process* (June 5)

2018 *Design Thinking in the Classroom: (Part I) Applying Design Processes to Enhance Course Development and Student Engagement* (February 23)

2017 *ARC: TensorFlow for Machine Learning* (October 9)

2017 *New Faculty Community* (August 14-15)

**Other**

2018 *The Summer Institute – Professional Development for Undergraduate Education*. Attended sessions on ethics integration, inclusive pedagogy, capstone course development, and assignment design for Pathways. Virginia Tech, Blacksburg, VA. (July 16-17)

## **V. Research and Creative Activities**

Performances, Exhibitions, Screenings	65
International	29 (27 juried)
National	20 (6 juried)
Regional	1
Local	15
Peer-reviewed publications	2
Conference presentations	10
International	4
National	4
Regional	1
Local	1
Internal Funding Amount	\$145,828 (\$40,459 responsibility)
External Funding Amount	\$35,000 (\$5,250 responsibility)

### **A. Awards, prizes, and recognitions**

- 2022 CAUS Excellence in Creative Achievement, College of Architecture and Urban Studies, Virginia Tech, Blacksburg, VA.
- 2022 People's Choice Award, Virginia Tech Creativity + Innovation Day, Virginia Tech, Blacksburg, VA. For *Arts in XR: Enjoying Immersive Art as a Social Experience*. For the artistic work *In Between Spaces*. In collaboration with Sang Won Lee and Myounghoon Jeon.
- 2021 Category Semi-finalist, Best Experimental North America, Super-Short, AltFF Alternative Film Festival, Toronto, CA. For *Mass*. In collaboration with Scotty Hardwig and Charles Nichols.
- 2020 Board Choice Award. Virginia Tech Creativity + Innovation Day, Virginia Tech, Blacksburg, VA. For *Time Garden*. In collaboration with Scotty Hardwig and Charles Nichols.
- 2020 Honorable Mention. iDesignAwards, Los Angeles, CA. For *Forgetfulness*. In collaboration with Meghan Dee and Ico Bukvic.

### **B. List of contributions**

- 1. Books or monographs – N/A**
- 2. Book chapters – N/A**
- 3. Books edited – N/A**

**4. Textbooks authored – N/A**

**5. Textbooks edited – N/A**

**6. Papers in refereed journals (both print and electronic)**

- 2020 Duer Z., Ogle T., Hicks D., Fralin S., Tucker T., Yu R (2020). Making the Invisible Visible: Bringing to Light the Hidden Histories of the World War I Tunnels at Vauquois Through a Hybridized Physical and Virtual Reality Exhibition. *IEEE Computer Graphics and Applications*, Vol 40 No. 4, pp. 39-50.  
50% acceptance rate.  
Single blind peer reviewed.
- 2018 Duer Z., Piilonen L., Glasson G.E (2018). Belle2VR: A Virtual Reality Visualization of Subatomic Particle Physics in the Belle II Experiment. *IEEE Computer Graphics and Applications*, Vol. 38 No. 3, pp. 33-43.  
50% acceptance rate.  
Single blind peer reviewed.

**7. Papers in refereed conference proceedings**

**Conference Papers and Presentations (International)**

- 2020 Piilonen, L., Duer, Z., & Glasson, G.E. (2020). *Belle2VR: An interactive virtual reality visualization of GEANTS2 event histories*. Proceedings of the CHEP 2019 - 24rd International Conference on Computing in High Energy and Nuclear Physics, Adelaide, South Australia. (November 4-8)  
33% acceptance rate.  
Single blind peer reviewed.
- 2018 Duer Z., Piilonen L., Glasson G.E. *Belle2VR – A Virtual Reality Visualization of Subatomic Particle Physics in the Belle II Experiment*. IEEE Vis 2018, Berlin, Germany. (October 25)  
Invited due to paper publication in journal.
- 2018 Yu R., Duer Z., Ogle T., Bowman D., Tucker T., Hicks D., Choi D., Bush Z., Ngo H., Nguyen P., Liu X. *Experiencing an Invisible World War I Battlefield Through Narrative-Driven Redirected Walking in Virtual Reality*. IEEE VR 2018, Reutlingen, Germany. (March 18)  
Double blind peer reviewed.  
Paper published in the *Proceedings of the IEEE Conference on Virtual Reality and 3D User Interfaces (VR)*, pp. 313-319.  
20.6% acceptance rate out of 316 submissions.
- 2017 Duer Z., Piilonen L., Glasson G.E. *Belle2VR – A Virtual Reality Visualization of Subatomic Particle Physics in the Belle II Experiment* (shortened presentation). IEEE Vis 2017, Phoenix, AZ. (October 2)  
Opt-in double blind peer reviewed.  
33.3% acceptance rate out of 18 submissions.



### **Conference Papers and Presentations (National)**

- 2019 Duer Z., Hardwig S. *Body, Full of Time*. Paper panel presentation at Border Control, The New Media Caucus Symposium. Ann Arbor, MI. Also moderated panel: Border Crossings Between Human, Animal, and Technology. (September 20-22)  
Peer reviewed abstract.  
35% acceptance rate out of 135 submissions.
- 2019 Duer Z. *Educational Platforms for Immersive Student-Driven Learning*. Paper panel presentation at the College Art Association 2019 Annual Conference. New York, NY. (February 16)  
50% acceptance rate.
- 2018 Hicks D., Ogle T., Duer Z., Tucker T., Choi D., Mullins R., Jagodzinski J., Pederson J., & Shelbourne S. *Virtual reality and immersive experiences of a Great War Battlefield*. Presentation at the annual conference of the National Council for the Social Studies, Chicago, Ill. (December 1)  
Acceptance rate not available.
- 2018 Johnson A., Hicks D., Ogle T., Duer Z., Tucker T., Choi D., Fralin S., Mullins R. *Design-Based and transdisciplinary research using mixed reality to teach about hard and hidden histories*. Symposium presentations at the annual conference of the College and University Faculty Assembly (CUFA) of the National Council for the Social Studies (NCSS), Chicago, Ill. (November 30)  
25% acceptance rate out of 230 submissions.

### **Conference Papers and Presentations (Regional)**

- 2017 Glasson G.E., Piilonen L., Spytek S., Dobson C., Barber J., Duer, Z. *Particle Physics Virtual Reality Project at Virginia Tech*. Virginia Association of Science Teachers, Roanoke, VA (November 16)  
Acceptance rate not available.

### **Conference Papers and Presentations (Local)**

- 2018 Piilonen L., Duer Z., Glasson G.E. *Belle II VR Visualization*. Virginia Tech Research Computing Days. Blacksburg, VA (April 10)  
Acceptance rate not available.

## 8. Performances, exhibitions, compositions

The following specifiers are used:

- *Self-produced*: The performance, exhibition, or screening was hosted and produced by myself or myself in collaboration with other artists and / or a venue. The venue and staff were either provided pro-bono, paid for by a grant, or paid for by sales of tickets for the event.
- *Invited*: Artwork solicited directly by curators or festival directors who are aware of an artist and their work.
- *Juried*: A public call for submissions generates a pool of potential artwork for performance, exhibition, or screening. Artists must submit a limited number of artwork entries to be competitively reviewed by jury. The work is peer reviewed by a professional or group of professionals with stature in the field. Artworks selected may also be in competition for awards of merit that are granted by the juror. When possible, statistical information has been provided indicating the rate of acceptance and the total number of entries the jurors reviewed.
- *Performance*: A live presentation of artwork.
- *Exhibition*: An installation of artwork in a gallery setting. Audiences are free to come and go at will.
- *Screening*: A viewing of video artwork as part of an event such as a film festival or conference recital.

### Performances, Exhibitions, Screenings (International)

- 2022      *Sound and Music Computing Festival (SMC-22)*, Saint-Étienne, France. Screening of *Time Garden: Skull Bridge*. In collaboration with Scotty Hardwig and Charles Nichols. (June 7-11).  
Juried screening.  
68% acceptance out of 70 submissions.
- 2022      *Noise Floor*, Cadman Studios, Staffordshire University, Stoke-on-Trent, England. Screening of *Time Garden: Skull Bridge*. In collaboration with Scotty Hardwig and Charles Nichols. (May 13-14).  
Juried screening.  
44% acceptance rate out of 68 submissions.
- 2022      *Society for ElectroAcoustic Music in the United States National Conference*, Kalamazoo, MI. Screening of *Time Garden: Skull Bridge*. In collaboration with Scotty Hardwig and Charles Nichols. (March 2).  
Juried screening.  
~35% acceptance rate.

- 2022 *Dance Camera Pandemia / Dance Camera Istanbul*, Istanbul, Turkey, online. Screening of *Mass*. In collaboration with Scotty Hardwig. (February 4).  
Juried screening.  
37% acceptance rate out of 230 submissions.
- 2021 *15<sup>th</sup> International Symposium on Computer Music Multidisciplinary Research*, Tokyo, Japan, online. Screening of *Time Garden: dawn replica*. In collaboration with Scotty Hardwig and Charles Nichols. (November 15-19).  
Juried screening.  
41% acceptance rate out of 32 submissions.
- 2021 *18<sup>th</sup> Brazilian Symposium on Computer Music*, Recife, Brazil, online. Screening of *Time Garden: dawn replica*. In collaboration with Scotty Hardwig and Charles Nichols. (October 24-27).  
Juried screening.  
Acceptance rate not available.
- 2021 *San Francisco Dance Film Festival*, San Francisco, CA. Screening of *Time Garden: dawn replica*. In collaboration with Scotty Hardwig and Charles Nichols. (October 15-24).  
Juried screening.  
19% acceptance rate out of 123 submissions.
- 2021 *Seoul International Computer Music Festival*, Seoul, South Korea. Screening of *Time Garden: dawn replica*. In collaboration with Scotty Hardwig and Charles Nichols. (October 15-17).  
Juried screening.  
Acceptance rate not available.
- 2021 *#social*, Czong Institute for Contemporary Art, Gimpo, South Korea. Installation of *Mass*. In collaboration with Scotty Hardwig. (October 13-31).  
Juried exhibition.  
Acceptance rate not available.
- 2021 *Screen Dance International*, online. Screening of *Mass*. In collaboration with Scotty Hardwig. (September 12).  
Juried screening.  
< 12.5% acceptance rate.
- 2021 *Audio Mostly*, online. Screening of *Time Garden: dawn replica*. In collaboration with Scotty Hardwig and Charles Nichols. (September 1-3).  
Juried screening.  
38% acceptance rate out of 44 submissions.

- 2021 *Festival de Cine-Arte en la Frontera, 11<sup>th</sup> Edition*, San Cristóbal, Venezuela. Screening of *Mass*. In collaboration with Scotty Hardwig. (August 6-7).  
Juried screening.  
Acceptance rate not available.
- 2021 *International Computer Music Conference 2021*, online. Screening of *Time Garden: dawn replica*. In collaboration with Scotty Hardwig and Charles Nichols. (July 25-31).  
Juried screening.  
Acceptance rate not available.
- 2021 *Experimental Dance & Music Film Festival*, Carlton Cinema, Toronto, Canada and LA LIVE Regal Cinemas, Los Angeles, CA. Screening of *Mass*. In collaboration with Scotty Hardwig. (June 19).  
Juried screening.  
Acceptance rate not available.
- 2021 *New York City Electroacoustic Music Festival*, online. Screening of *Time Garden: dawn replica*. (June 21, 2021).  
Juried screening.  
52% acceptance rate.
- 2021 *Society for Electroacoustic Music in the United States (SEAMUS) Virtual National Conference*, online. Screening of *Time Garden: dawn replica*. In collaboration with Scotty Hardwig and Charles Nichols. (April 23-25).  
Juried screening.  
37.7% acceptance rate out of 175 submissions.
- 2021 *Solidair*, online. Screening of *Cloud City Collage*. In collaboration with Scotty Hardwig, Renato González, Eric Lyon, and Kyle Hutchins. (April 16).  
Invited screening.
- 2021 *AltFF Alternative Film Festival 2021 Spring Edition*, online. Screening of *Mass*. In collaboration with Scotty Hardwig. (March 29).  
Juried screening.  
Acceptance rate not available.
- 2021 *IEEE 6<sup>th</sup> VR Workshop on Sonic Interactions for Virtual Environments 2021 (SIVE 2021)*, online. Screening of *Time Garden: dawn replica*. In collaboration with Scotty Hardwig and Charles Nichols. (March 27).  
Juried screening.  
50% acceptance rate.
- 2020 *7<sup>th</sup> ACM SIGPLAN International Workshop on Functional Art, Music, Modelling and Design*, Jersey City, NJ (online due to COVID-19). Screening of *Time Garden, Morning*. In collaboration with Scotty Hardwig and Charles Nichols. (August 28).  
Juried screening.  
Acceptance rate not available.

- 2020 *SIGGRAPH 2020*, Washington D.C. (Online due to COVID-19)  
Installation at Immersive Pavilion of virtual reality exhibition *If this place could talk ... First World War tunnel warfare through haptic VR*. In collaboration with Todd Ogle, David Hicks, and Scott Fralin. (July 19-23).  
Juried exhibition.  
14.8% acceptance rate out of 155 submissions.
- 2020 *Artist Statement #5*, Czong Institute for Contemporary Art, Gimpo, South Korea.  
Installation of video *nothings\_nomeanings* and printed artist statement in paper publication. (May 6-24).  
Juried exhibition.  
~33.3% acceptance rate.
- 2020 *Society for Electro-Acoustic Music in the United States 2020 National Conference*, Charlottesville, VA.  
Presented the virtual reality installation *Forgetfulness* as an artistic exhibition at the conference. In collaboration with Ico Bukvic and Meaghan Dee. Responsible for 3D modeling, programming, and visual direction. (March 12-14).  
Juried exhibition.  
31.3% acceptance rate out of 32 submissions.  
(Conference canceled)
- 2019 *6<sup>th</sup> International Conference on Movement and Computing*, Tempe, AZ. Presented the performance *Body, Full of Time* in a concert series at the conference. In collaboration with Scotty Hardwig, Nate King, Caleb Flood\*, and Estefania Perez-Vera\*. (October 12).  
Juried performance.  
58-62% acceptance rate out of 93-100 submissions.
- 2019 *International Conference for Auditory Display 2019*, Newcastle-upon-Tyne, UK. Installed VR exhibition *Forgetfulness*. In collaboration with Meaghan Dee and Ico Bukvic. Responsible for 3D modeling, programming, and visual direction. (June 23-27).  
Juried exhibition.  
100% acceptance rate.
- 2018 *New Interfaces for Musical Expression*, Virginia Tech, Blacksburg, VA. Presented the virtual reality installation *Forgetfulness* as an artistic exhibition at the conference. In collaboration with Meaghan Dee and Ico Bukvic. Responsible for 3D modeling, programming, and visual direction. (June 3).  
Invited exhibition.
- 2018 *Madatac 09\_2018*, Madrid, Spain. Screened the work *nothings\_nomeanings*. (January 1).  
Juried screening.  
Acceptance rate not available.

- 2017 *3<sup>rd</sup> Electroacoustic Music Festival Ecos Urbanos*, Tecnológico de Monterrey and the Superior School of Music, Mexico City, Mexico. Screened the work *nothings\_nomeanings*. (November 10).  
Juried screening.  
Acceptance rate not available.
- 2017 *International Composers and Interactive Artists Fuse Concert*, DiMenna Center for Classical Music, New York City, NY. Screened a fixed media version of the work *What Bends*. In collaboration with Charles Nichols. (October 21).  
Juried screening.  
Acceptance rate not available.

### **Performances, Exhibitions, Screenings (National)**

- 2021 *Feet to the Floor Festival 2021*, Northampton, MA. Screening of *Time Garden: dawn replica*. In collaboration with Scotty Hardwig and Charles Nichols. (October 2021).  
Invited exhibition.
- 2021 *Sans Souci Festival of Dance Cinema*, Boulder, CO. Screening of *Mass*. In collaboration with Scotty Hardwig. (September 3).  
Juried screening.  
Acceptance rate not available.
- 2021 *Excessive Realness*, online. Performance of *Grey Patterns*. In collaboration with Scotty Hardwig. (June 19).  
Invited performance.
- 2021 *Red Rock ScreenDance Film Festival*, Electric Theater, St. George, UT. Screening of *Mass*. In collaboration with Scotty Hardwig. (June 10).  
Juried screening.  
64% acceptance rate out of 44 submissions.
- 2021 *DANCINEMA*, online. Screening of *Mass*. In collaboration with Scotty Hardwig. (April 2).  
Juried screening.  
25%-33% acceptance rate.
- 2020 *Utah Arts Fest*, Salt Lake City, UH. Performance of *Body, Full of Time*. In collaboration with Scotty Hardwig, Nate King, Caleb Flood\*, and Estefania Perez-Vera\*. (June 27, 28).  
Invited performance.  
(Festival canceled)

- 2020 *Dance West*, Salt Lake City, UT.  
Performance of *Body, Full of Time*, and educational community workshops. In collaboration with Scotty Hardwig, Nate King, Caleb Flood\*, and Estefania Perez-Vera\*. (June 22-26).  
Invited performance.  
(Festival canceled)
- 2020 *Excessive Realness Festival*, Washington, D.C.  
Performance of *Body, Full of Time*, and educational community workshops. In collaboration with Scotty Hardwig, Nate King, and Caleb Flood. (June 11-14).  
Invited performance.  
(Festival canceled)
- 2020 *Or Be Forever Fallen*, Ambler, PA.  
Performance of *Or Be Forever Fallen* for string quartet, fixed video, and live interactive video. In collaboration with Charles Nichols and the Beo String Quartet. Responsible for fixed video and live interactive video. (April 16, 17).  
Self-produced performance.  
(Performance canceled)
- 2020 *Or Be Forever Fallen*, Port Jefferson, NY.  
Performance of *Or Be Forever Fallen* for string quartet, fixed video, and live interactive video. In collaboration with Charles Nichols and the Beo string quartet. Responsible for fixed video and live interactive video. (March 26, 27).  
Self-produced performance.  
(Performance canceled)
- 2020 *Conference for Research on Choreographic Interfaces*, Providence, RI. Presented the virtual reality installation *Time Garden* at the conference. In collaboration with Scotty Hardwig and Charles Nichols. Responsible for visual direction. (March 5-7).  
Invited exhibition.
- 2020 *Or Be Forever Fallen*, Sherwood Oaks, Cranberry Township, PA.  
Performance of *Or Be Forever Fallen* for string quartet, fixed video, and live interactive video. In collaboration with Charles Nichols and the Beo String Quartet. Responsible for fixed video and live interactive video. (January 21).  
Self-produced performance.
- 2020 *Or Be Forever Fallen*, Steamworks Creative, Gibsonia, PA.  
Performance of *Or Be Forever Fallen* for string quartet, fixed video, and live interactive video. In collaboration with Charles Nichols and the Beo String Quartet. Responsible for fixed video and live interactive video. (January 15).  
Self-produced performance.

- 2019 *ACCELERATE: ACC Smithsonian Creativity and Innovation Festival 2019*, Smithsonian National Museum of American History, Washington D.C. Installed history education virtual reality exhibition *Exploring the World War I Tunnels of Vauquois through Virtual Reality*. In collaboration with David Hicks, Todd Ogle, Doug Bowman, Scott Fralin, Dongsoo Choi, Thomas Tucker, Erik Westman. Responsible for visual direction, programming, and virtual reality interface. (April 5-7, 2019).  
Juried exhibition.  
17% and 62% acceptance rates across two juried stages.
- 2019 *Practicing Presence Festival*, Northampton, MA. Presented two performances of *Body, Full of Time*. In collaboration with Scotty Hardwig, Nate King, Caleb Flood\*, and Estefania Perez-Vera\*. Responsible for visual direction, programming, and projection. (May 25-26).  
Invited performance.
- 2018 *Alliance for the Arts in Research Universities National Conference*, University of Georgia, Athens, GA. Presented the work virtual reality installation *Forgetfulness*. In collaboration with Meaghan Dee and Ico Bukvic. Responsible for 3D modeling, programming, and visual aesthetic. (November 1).  
Invited exhibition.
- 2018 *Exploring America's Forgotten War*, Digital Scholarship Lab, Michigan State University, East Lansing, MI. Installed the history education virtual reality exhibition as a long-term installation in their student-focused lab. In collaboration with Todd Ogle, David Hicks, Thomas Tucker, and Doug Bowman. Responsible for programming and virtual environment creation using student-created 3D models. (June 7).  
Invited exhibition.
- 2018 *Declarations*, Institute for Contemporary Art, Virginia Commonwealth University, Richmond, VA. Presented the installation *Diverging, converging...* In collaboration with Stephen Vitiello. Responsible for the digital images for four prints. (April 21-September 9).  
Invited exhibition.
- 2018 *Intersections: 16<sup>th</sup> Biennial Symposium for Art and Technology*, Connecticut College, New London, CT. Presented the work *nothings\_nomeanings* in a performance at the conference. (February 15).  
Juried screening.  
25% acceptance rate.
- 2017 *Atlantarium AV Festival*, Woodruff Park, Atlanta, GA, USA. Screened the work *nothings\_nomeanings*. (August 9).  
Juried screening.  
Acceptance rate not available.



## Performances, Exhibitions, Screenings (Regional)

- 2018 *Exploring America's Forgotten War*. Salem Museum & Historical Society, Salem, VA. Installed history education virtual reality exhibition. In collaboration with Todd Ogle, David Hicks, Thomas Tucker, and Doug Bowman. (June 7-November 11).  
Invited exhibition.

## Performances, Exhibitions, Screenings (Local)

- 2022 *ICAT Creativity and Innovation Day*, Moss Arts Center Experience Studio, Virginia Tech, Blacksburg, VA. Presented an interactive installation *In Between Spaces*. (May 2, 2022).  
Invited exhibition.
- 2022 *New Music + Technology Festival*, Recital Salon, Squires, Virginia Tech, Blacksburg, VA. Presented *Inside the Burrow of Science*. In collaboration with Charles Nichols, Erika Meitner, Vanessa Diaz, Ariana Wyatt, John Irrera, Ben Wyatt, Annie Stevens. (May 2, 2022).  
Invited performance.
- 2022 *Faculty Triennial*, Moss Arts Center, Virginia Tech, Blacksburg, VA. Presented *Time Garden: Noon*. In collaboration with Scotty Hardwig and Charles Nichols. (April, 2022).  
Invited exhibition.
- 2021 *New Music + Technology Festival*, Moss Arts Center Cube, Virginia Tech, Blacksburg, VA. Presented *Time Garden: Skull Bridge*. In collaboration with Scotty Hardwig and Charles Nichols (December 7, 2021).  
Invited screening.
- 2021 *Creativity and Innovation Faculty Concert*, Online. Presented *Time Garden: dawn replica*, *Time Garden: Cloud Basket*, *Time Garden: Pelvis*. In collaboration with Scotty Hardwig and Charles Nichols. (May 4).  
Invited screening.
- 2020 *Creative Technologies in Music Concert*, Online. Presented *Time Garden: Noon: Heart*. In collaboration with Scotty Hardwig and Charles Nichols. (December 7).  
Invited screening.
- 2020 *Illuminating Flight and Refuge*, Moss Arts Center, Virginia Tech, Blacksburg, VA. Presented *Borderless Species* as a projected video on a large outside wall of the building. (Nov 5 – Nov 15).  
Invited exhibition.

- 2020 *ICAT Creativity and Innovation Day*, Moss Arts Center Experience Studio, Virginia Tech, Blacksburg, VA. Presented online video documentation of *Time Garden*. (May 4).  
Invited exhibition.
- 2019 *Cube Dance: Square Dance Cubed*, Moss Arts Center Cube, Virginia Tech, Blacksburg, VA. Presented a community square dance with motion capture tracking visualization. In collaboration with Phyllis Newbill, the Blacksburg Hoorah Cloggers, LP Kelly, and the Happy Hollow String Band. (June 8).  
Invited performance.
- 2019 *ICAT Creativity and Innovation Day*, Moss Arts Center Experience Studio, Virginia Tech, Blacksburg, VA. Presented an interactive installation of the second movement of the *Body, Full of Time* performance. (May 6).  
Invited exhibition.
- 2019 *Body, Full of Time*, Moss Arts Center Cube, Virginia Tech, Blacksburg, VA. Presented a series of 4 performances across 3 days. In collaboration with Scotty Hardwig, Nate King, Caleb Flood, and Estefania Perez-Vera. (April 25-27).  
Self-produced performance.
- 2019 *Exploring America's Forgotten War: The Vauquois Experience*. Newman Library, Virginia Tech, Blacksburg, VA. Installed history education virtual reality for public use in a main section of the fourth floor. In collaboration with Todd Ogle, David Hicks, Thomas Tucker, and Doug Bowman. (February 23-27).  
Invited exhibition.
- 2018 *Badstar*, Moss Arts Center Cube, Virginia Tech, Blacksburg, VA. Presented an hour long performance of spatial audio and live immersive projection mapped video for custom architecture. In collaboration with Charles Nichols, Holland Hopson, Andre Foisy, and Jon Rugh. Responsible for live immersive projection mapped video. (October 11-13).  
Self-produced performance.
- 2018 *ICAT Creativity and Innovation Day*, Moss Arts Center, Virginia Tech, Blacksburg, VA, USA. Presented demonstrations of the works *Badstar*, *PlayerOneQB*, and *Vauquois*. (April 30).  
Invited exhibition.
- 2017 *Beo String Quartet*, Moss Arts Center, Virginia Tech, Blacksburg, VA, USA. Presented a 15 minute performance of *Or Be Forever Fallen* for string quartet, fixed video, and live interactive video. In collaboration with Charles Nichols and the Beo String Quartet. Responsible for fixed video and live interactive video. (November 16).  
Invited performance.

## 9. Digital Scholarship – N/A

## 10. Reviews

The following section includes books, magazine and newspaper articles, video profiles and online press in which my work/exhibitions have been mentioned, reviewed, or reproduced.

### International

2019 “With the symbolic push of a button, the prototype supercomputer was launched at the University of Maribor.” Article details the presentation to the president of Slovenia of a new supercomputer. The presentation included video of Belle2VR research project. *Univerza v Mariboru University Media Center News*, University of Maribor, Maribor, Slovenia, November 19, 2019.

### National

2018 Raths, D. “Guiding Faculty into Immersive Environments.” Article features interview and details methods for universities to support faculty and student usage of emerging technology facilities. *Campus Technology*, Woodland Hills, CA, July 03, 2018.

### Regional

2020 “Light focuses ‘Flight’ theme at Moss.” Article covers the installation of the *Illuminating Flight and Refuge* projection mapping exhibition. *The Roanoke Times*, Roanoke, VA, November 8, 2020.

2019 Schwager, C. “Virtual reality event lets participants experience World War One.” Article and video covers the installation of Vauquois exhibit in Virginia Tech Newman Library. *WSET ABC13News*, Lynchburg, VA, February 13, 2019.

2018 Interview for article “Q+A with Kinetic Imaging alum Zach Duer (MFA ’14).” *VCU School of Visual Arts*, Virginia Commonwealth University, Richmond, VA, January 3, 2019.

2018 Lopez, T. “Salem Museum open virtual reality exhibit.” Article details installation of World War I Vauquois interactive virtual reality exhibit at museum. *WSLS News*, Salem, VA, November 02, 2018.

### Local

2019 “Imagine That - A Destination for Creativity and Innovation.” Images from Body, Full of Time used on Magazine cover and throughout article. Belle2VR Research Project described. Vauquois VR exhibition project described. *Virginia Tech Magazine Vol 41 No. 3.*, Virginia Tech, Blacksburg, VA, Summer 2019.

- 2019 "Immersive technology brings the tunnels of Vauquois to Blacksburg." Virginia Tech promotional video and interview covers the process and exhibition of the Vauquois installation. *Virginia Tech Media*, Virginia Tech, Blacksburg, VA, February 15, 2019.
- 2019 Brown, A. "Tunnel Vision: Immersive technology brings the tunnels of Vauquois, France to Blacksburg." Virginia Tech promotional article, video, and interview covers the process and exhibition of the Vauquois installation. *Virginia Tech Daily*, Virginia Tech, Blacksburg, VA, February 8, 2019.
- 2018 "The Dean's Vision." Forgetfulness project highlighted as part of CLAHS dean Rosemary Blieszner's visit to the Cube. *VT College News*, Virginia Tech, Blacksburg, VA, September 28, 2018.
- 2018 Sanders, S. "Badstar offers an immersive, experimental, and visually rich concert." Article about Badstar performance. *Virginia Tech Daily*, Virginia Tech, Blacksburg, VA, October 5, 2018.
- 2018 Lovegrove, R. "The Cube: A Space Where Science and Senses Collide." Interview details winter semester honors course UH 3004 Immersive Virtual Environments. *Virginia Tech Magazine*, Virginia Tech, Blacksburg, VA, Spring 2018.

**11. Numbered extension publications – N/A**

**12. Prefaces, introductions, catalogue statements, etc. – N/A**

**13. Papers and posters presented at professional meetings**

- 2019 Piilonen L., Duer Z., Glasson G. *Belle II VR: A Virtual Reality Tool for Student Training in Subatomic Particle Physics*, National Academy of Sciences' Branches of the Same Tree: A National Convening on the Integration of Arts, Humanities, and STEMM in Higher Education, Washington, D.C. (April 12)  
Peer reviewed poster
- 2019 Ogle J., Duer Z., Tucker T., Yu R., Hicks D., Bowman D., Quigley P., Cline D., Westman E. *Adventures in Visualizing History: A Case of Creative Transdisciplinary Work at Virginia Tech*, National Academy of Sciences' Branches of the Same Tree: A National Convening on the Integration of Arts, Humanities, and STEMM in Higher Education, Washington, D.C. (April 12)  
Peer reviewed poster.
- 2019 Duer Z. *Artist Talk*, New Media Caucus Annual Meeting. Hunter College, New York City, NY. Presented an artist talk on my recent art work. (February 14).  
Invited.

2018 Ogle T., Hicks D., Tucker T., Choi D., Duer Z. *If This Place Could Talk: The Lost Village of Vauquois*. American Educational Research Association, New York, NY (April 17)  
Acceptance rate not available.

**14. Translations – N/A**

**15. Abstracts – N/A**

**16. Other papers and reports – N/A**

**C. Sponsored research and other grant awards**

**Grants (External)**

2021 - \$30,000 – Experiencing Civil War History Through Augmented Reality:  
2022 Soldiers, Civilians, and the Environment and Pamplin Historical Park.  
National Endowment for the Humanities Promotion of the Humanities  
Public Programs, Digital Projects for the Public Discovery Grant.  
PI: Paul Quigley. Co PIs: Corrine Guimont, Todd Ogle, Douglas Bowman,  
Kurt Luther, David Hicks, Zach Duer, Thomas Tucker.  
Responsible for 12%  
14% acceptance rate out of 102 applications.  
*Funded team travel to research location.*

2021 \$5,000 – Nomadic Performance Technologies for Dance-Making in the  
21<sup>st</sup> Century. Digital Matters Exhibition/Performance Faculty Grant,  
University of Utah.  
PI: Eric Handman. Co PIs: Scotty Hardwig, Zach Duer.  
Responsible for 33%.  
15% acceptance rate.  
*Funded residency travel and lodging.*

**Grants (Internal)**

2022 - \$21,628 – Digital Games and Interactive Curriculum. Major SEAD Grant,  
2023 Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg,  
VA.  
PI: Evan Lavendar-Smith. Co PIs: Wallace Santos Lages, Sang Won Lee,  
Michael Hsiao, Zach Duer, James Ivory, Avery Wiscomb.  
Responsible for 14%.  
*Funded Graduate Research Assistantship and summer faculty stipends  
for curriculum development*

2021 \$5,000 – Artistic Exploration of Childhood Cognitive Development. SciArt  
Initiative, Center for Communicating Science, Virginia Tech, Blacksburg,  
VA.  
PIs: Vanessa Diaz, Charles Nichols. Co PIs: Zach Duer, Erika Meitner,  
Ariana Wyatt.  
Responsible for 20%.  
*Funded summer research stipends.*

- 2020 - 2021     \$25,000 – VRViewfinder: Engaging Bystanders in VR-based Interactive Media Using Auxiliary Viewing Devices. Major SEAD Grant, Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA.  
PI: Sang Won Lee. Co PI: Myounghoon “Philart” Jeon, Zach Duer  
Responsible for 33%.  
*Funded CS Graduate Research Assistantship, a SOVA undergraduate student, and equipment for the creation and testing of a platform allowing audiences to view VR work.*
- 2020       \$7,800 – Process and Interface for Remote Choreographic Devices. ICAT Rapid Response Grant, Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA.  
PIs: Zach Duer, Scotty Hardwig, Myounghoon “Philart” Jeon.  
Responsible for 33%.  
12.5% acceptance rate out of 32 proposals.  
*Funded SOVA and CS undergraduate students summer labor, and equipment for the creation and testing of a platform allowing remote choreographic collaboration using computer vision and machine learning.*
- 2019 - 2020     \$11,400 – Body, Full of Time. Major SEAD Grant, Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA.  
PI: Zach Duer and Scotty Hardwig.  
Responsible for 50%.  
*Funded faculty research buyout, equipment, and materials for the creation and generation of the second work in the Body, Full of Time series: Time Garden.*
- 2019       \$3,000 – Square Dance Cubed. Mini SEAD Grant, Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA.  
PI: Zach Duer. Co PI: Phyllis Newbill, Anne Elise Thomas.  
Responsible for 50%.  
*Funded the development of square dance performance and community event incorporating live motion capture with square dancing and projection design. Responsible for projection design, programming, motion capture.*
- 2018       \$3,000 – Body, Full of Time. Mini SEAD Grant, Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA.  
PI: Zach Duer and Scotty Hardwig.  
Responsible for 50%.  
*Funded materials for the performance of Body, Full of Time.*
- 2018       \$1,000 – International Travel Support Grant. Virginia Tech, Blacksburg, VA.  
PI: Zach Duer.  
Responsible for 100%.  
*Funded travel to Berlin, Germany, to deliver a paper presentation at the conference IEEE Vis 2018.*

- 2018 - \$20,000 – Pathways Grant Program. Virginia Tech, Blacksburg, VA.  
2019 PI: Zach Duer. Co PI: Jimmy Ivory, Katie MacDonald, Tacie Jones.  
Responsible for 25%.  
*Funded the development of a new Pathways course in the Creativity and Innovation transdisciplinary community. Funding paid for faculty summer time, as well as classroom equipment and materials.*
- 2017 - \$25,000 – Embodied Virtual Reality for Training and Performance. Major  
2018 SEAD Grant, Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg.  
PI: Todd Ogle. Co PI: Zach Duer, Ico Bukvic, Robin Queen, Doug Bowman, Nathan Lau, Stefan Duma.  
Responsible for 15%.  
*Funded a graduate student for the development of project PlayerOneQB, a football quarterback training simulator in virtual reality.*
- 2017 - \$20,000 – Immersive Music Performance and Video Projection Mapping.  
2018 Major SEAD Grant, Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA.  
PI: Charles Nichols. Co PI: Zach Duer, Jonathan Rugh, Andre Foisy.  
Responsible for 33%.  
*Funded materials and student workers for the development and performance of Badstar.*
- 2017 \$3,000 – Visualization and Simulation of Infectious Disease Spread. Mini  
SEAD Grant, Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA.  
PI: Bryan Lewis. Co PI: Zach Duer, Van Truong.  
Responsible for 33%.  
*Funded the purchase of a virtual reality kit for the development of a prototype visualization of epidemiological data.*

#### **D. Invited keynote presentations or lectures**

- 2021 Q and A with Artists Panel. Screen Dance International. August 18, 2021.  
*Answered questions about the process of creating Mass.*
- 2020 ICAT Playdate – *Time Garden*. Zach Duer, Scotty Hardwig, Charles Nichols. Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA. (September 4)  
*Presented collaborative work on the eponymous grant funded project to an interdisciplinary local community and academic audience.*
- 2020 ICAT Playdate – *Body, Full of Time*. Zach Duer, Scotty Hardwig, Nate King, Caleb Flood. Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA. (January 31)  
*Presented collaborative work on the eponymous grant funded project to an interdisciplinary local community and academic audience.*

- 2019 Moss Arts Center Gallery Talk – *Data Visualization*. Zach Duer. Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA. (September 3)  
*Gave a solo talk about my opinions on data visualization.*
- 2018 ICAT Playdate – *Wintermester Projects*. Zach Duer, Tanner Upthegrove. Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA. (January 2)  
*Presented student projects from the Wintermester 2018 UH 3004 class to an interdisciplinary local community and academic audience.*
- 2017 ICAT Playdate - *Visualizing World War I through Mixed Reality*. Zach Duer, Todd Ogle, David Hicks, DongSoo Choi, Doug Bowman, Run Yu, Huy Nguyen. Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA. (October 20)  
*Presented the work of the eponymous grant funded project to an interdisciplinary local community and academic audience.*
- 2017 ICAT Playdate – *Belle II VR – Particle Physics in Virtual Reality*. Zach Duer, Leo Piilonen. Institute for Creativity, Arts, and Technology, Virginia Tech, Blacksburg, VA. (September 29)  
*Presented the work of the eponymous grant funded project to an interdisciplinary local community and academic audience.*

## **E. Editorships, curatorships, etc.**

### **1. Journals or other learned publications – N/A**

- 2020 Reviewer for *Ground Works*, a2ru's online compendium. *Reviewed, voted, and provided feedback on an interdisciplinary artwork and manuscript submission for permanent inclusion in compendium. This was prior to serving on the Editorial Board.* Alliance for the Arts in Research Universities, Ann Arbor, Michigan.
- 2019 Reviewer for *Visual Resources: A Journal on Images and their Uses*, Vol. 35, 2019. Ed. Barbara Pezzini.

### **2. Editorial boards**

- 2020 - a2ru Ground Works Editorial Board Member. Alliance for the Arts in Research Universities, Ann Arbor, Michigan.

### **3. Exhibitions, performances, displays, etc.**

- 2018 New Interfaces for Musical Expression. Judge for Best Installation Award. Virginia Tech, Blacksburg, VA. June 3-6.
- 2018 Virginia High School Creativity and Innovation Summit. Judge for competition. Virginia Tech, Blacksburg, VA. April 29.



**F. Economic contributions and entrepreneurship**

1. **Start-up businesses – N/A**
2. **Commercialization of discoveries – N/A**
3. **Other – N/A**

**G. Intellectual properties**

1. **Software – N/A**
2. **Patents – N/A**
3. **Disclosures (pre-patent) – N/A**

**VI. International and Professional Service and Additional Outreach and Extension Activities**

**A. International programs accomplishments**

1. International recognition and awards – N/A
2. International research collaborations – N/A
3. Other international activities – N/A

**B. Professional service accomplishments**

1. Service as an officer of an academic or professional association – N/A
2. Other service to one's profession or field – N/A
3. Professional meetings, panels, workshops, etc., led or organized – N/A

**C. Efforts to diversify the disciplines**

1. Disciplinary of interdisciplinary efforts to attract underrepresented students to different majors and graduate programs at Virginia Tech – N/A
2. Participation in campus, local, regional, or national organizational efforts to promote diversity and inclusion in scholarly or professional fields

2021 Secured \$750 grant from Virginia Tech *Woman and Minority Artists and Scholars Lecture Series* to sponsor micha cardenas lecture at Virginia Tech.

2020 Helped organize and participated in *Defund + Defend: Digital Artifact Sale for M4BL*. This was a fundraiser for Movement 4 Black Lives organized by the New Media Caucus.

**D. Additional outreach and extension activities and outcomes**

1. Peer evaluations of extension program(s) – N/A
2. Professional achievements in program development, implementation, and evidence of impact – N/A
3. Outreach and extension publications, including trade journals, newsletters, websites, journals, multimedia items, etc. – N/A

**4. Presentations in an area of expertise to community and civic organizations, including schools and alumni groups, etc.**

2018 - *Exploring America's Forgotten War*. Blacksburg Middle School.  
2019 Installed history education virtual reality exhibition for use in history classrooms. In collaboration with Todd Ogle, David Hicks, Thomas Tucker, and Doug Bowman.

**5. Outreach to underrepresented or underserved communities, in the Commonwealth, domestically, or internationally – N/A**

**6. Service on external boards, commissions, and advisory committees**

2020 - Future Bodies, the 2022 New Media Caucus Symposium and Exhibition, Steering Committee co-chair. *Responsible as one of three lead organizers for a national symposium and exhibition for new media art at Virginia Tech.*

2020 - New Media Caucus, Board Member. *Responsible for guiding the vision of the organization and executing tasks to enact that vision.*

2019 - New Media Caucus, Communications Committee, committee member. *Responsible for managing the website of the New Media Caucus, the only national or international organization for new media artists. I also write artist profiles, and manage requests for posting materials to the website such as job openings, open calls for art exhibition submissions, and events.*

2018 Border Control, the 2018 New Media Caucus Symposium and Exhibition, communications committee. *Responsible for minor communications outreach in organizing a national symposium and exhibition for new media art at University of Michigan.*

2018 New Interfaces for Musical Expression 2018, Special Programs and Telematics subcommittee, committee member.

**7. Expert witness/testimony – N/A**

**8. Consulting that is consistent with university/department priorities – N/A**

**9. Recognitions and awards for outreach and extension effectiveness – N/A**

**VII. University Service**

University committees	8 (2 chaired)
College committees	1
Department committees	6

**A. University meetings, panels, workshop, etc. led or organized – N/A**

**B. Department, college, and university service, including administrative responsibilities**

**University Committee Service**

- 2019 - Center for Human Computer Interaction, Master’s in Human Computer pres. Interaction program creation working group, member.  
*This group, led by Doug Bowman, is working to conceptualize and write the proposal for a one-year professional master's degree in Human Computer Interaction.*
- 2018 - Faculty search committee member, University Honors College. Collegiate  
2019 Assistant Professor in Technology, Creativity, and Innovation.
- 2018 - Cubefest 2019 organization committee, member.  
2019 *Juried artistic submissions to this exhibition and performance event. Attended meetings to organize the vision and logistics of the event.*
- 2018 - Center for Human Computer Interaction, interdisciplinary education  
2019 working group, lead.  
*Attempted to develop an interdisciplinary undergraduate curriculum in HCI with faculty from CS, Graphic Design, ISE, and ID.*
- 2018 Creativity and Innovation curriculum committee, committee chair.
- 2017 - Faculty search committee member, School of Performing Arts. Assistant  
2018 Professor of Movement, Performance, and Integrated Media. Tenure track.
- 2017 - Faculty search committee member, Institute for Creativity, Arts, and  
2018 Technology. Research Assistant Professor for Immersive Environments. Not tenure track.
- 2017 Creativity and Innovation curriculum committee, committee member.

**University Non-Committee Service**

- 2018 Learning Systems Innovation and Effectiveness DA/SGA Fall Event, Transdisciplinary Formal and Informal Education panelist.
- 2018 University commencement ceremony usher.

- 2018 ICAT Open House for Virginia Tech President's State of the University Address. Presented projects *Forgetfulness* and *Vauquois*.
- 2018 Virginia Tech President's Box demonstration. Demonstrated virtual reality football quarterback training software to donors and guests at the President's box during a football game.
- 2018 Presented ongoing creative projects to the Creativity and Innovation District board, representing work done within the district.

**College Committee Service**

- 2020 - CAUS honorifics committee member.  
pres.

**College Non-Committee Service**

- 2019 *Hokies in New York*. Presented research at alumni event in New York City on behalf of the College of Architecture and Urban studies.
- 2017 *CAUS in the Cube*. Co-managed with Thomas Tucker. A showcase of art work by Creative Technologies faculty and students in the Cube at the Moss Arts Center of Virginia Tech, accompanying an event for the new Dean of the College of Architecture and Urban Studies to meet alumni.

**Department Committee Service**

- 2021 School of Visual Arts curriculum committee acting chair.
- 2019 School of Visual Arts non-tenure track promotion committee member.
- 2018 - Creative Technologies MFA Graduate Program and Degree Committee.  
pres. Review MFA applications and attend admissions meetings.
- 2018 - School of Visual Arts curriculum committee member.  
pres.
- 2018 - Faculty search committee member, School of Visual Arts. Assistant or  
2019 Associate Professor of Creative Technologies and Interdisciplinary 3D Media. Tenure track.
- 2017 - Creative Technologies scheduling committee member.  
pres.

**Department Non-Committee Service**

- 2020 Built custom website for SOVA BFA capstone students to publish their work, in lieu of exhibitions cancelled by COVID. Website was used for 3 years.

- 2019 Arranged studio visits for Creative Technologies MFA students with guest artist Daniel Canogar.
- 2019 Conducted teaching observation of School of Visual Arts faculty Betsy Bannan.
- 2018 Planned and implemented the creation of a new computer lab for the CINEMA studio. Purchased computer components, assembled them, and planned installation of lab. Interfaced with School of Performing Arts and Institute for Creativity, Arts, and Technology to meet diverse needs and manage shared scheduling.
- 2017 - School of Visual Arts portfolio review. Contributed to close review,  
2018 ranking, and discussion in small committee of faculty to consider Creative Technologies portfolio review applicants.
- 2017 Creative Technologies open house. Presented program information for visiting potential undergraduate students.

**C. Service that promotes diversity and inclusion – N/A**

**D. Service to students – involvement in co-curricular activities, advising student organization, etc. – N/A**

## **VIII. Work Under Review or in Progress**

### **A. Work submitted and under review**

- 2023 - \$100,00 – Experiencing Civil War History Through Augmented Reality:  
2024 Soldiers, Civilians, and the Environment and Pamplin Historical Park.  
NEH Promotion of the Humanities Public Programs, Digital Projects for  
the Public Prototyping Grant.  
PI: Paul Quigley. Co PIs: Corrine Guimont, Todd Ogle, Douglas Bowman,  
Kurt Luther, David Hicks, Zach Duer, Thomas Tucker.
- 2022 AI International Film Festival, American Fork, UT. Submitted Time  
Garden: Skull Bridge. In collaboration with Scotty Hardwig and Charles  
Nichols. (May 22, 2022).
- 2022 Short Film Factory, Bucharest, Hungary. Submitted Time Garden: Skull  
Bridge. In collaboration with Scotty Hardwig and Charles Nichols. (July 1,  
2022).
- 2022 Supernova Digital Animation Festival, Denver, CO. Submitted Time Garden:  
Skull Bridge. In collaboration with Scotty Hardwig and Charles Nichols.  
(September 1, 2022).
- 2022 Split Film Festival, Split, Croatia. Submitted Time Garden: Skull Bridge. In  
collaboration with Scotty Hardwig and Charles Nichols. (September 1, 2022).
- 2022 Tanzahoi International Dance Film Festival, Hamburg, Germany. Submitted  
Time Garden: Skull Bridge. In collaboration with Scotty Hardwig and Charles  
Nichols. (September 9, 2022).
- 2022 01 NFT, London, UK. Submitted Time Garden: Skull Bridge. In collaboration  
with Scotty Hardwig and Charles Nichols. (September 11, 2022).
- 2022 Festival of Animation, Berlin, Germany. Submitted Time Garden: Skull  
Bridge. In collaboration with Scotty Hardwig and Charles Nichols. (September  
30, 2022).
- 2022 Xperimetral, Chisinau, Moldova. Submitted Time Garden: Skull Bridge. In  
collaboration with Scotty Hardwig and Charles Nichols. (October 12, 2022).
- 2022 Contact, 17<sup>th</sup> Biennial Symposium on Arts and Technology, Ammerman  
Center, Connecticut College. Submitted *Daedalus Dream*. In collaboration  
with Scotty Hardwig and Eric Handman. (November 10-12).  
Juried performance.
- 2022 Contact, 17<sup>th</sup> Biennial Symposium on Arts and Technology, Ammerman  
Center, Connecticut College. Submitted *Time Garden: Skull Bridge*. In  
collaboration with Scotty Hardwig and Charles Nichols. (November 10-12).  
Juried screening.

- 2022 Cucalorus Film Festival, Wilmington, NC. Submitted Time Garden: Skull Bridge. In collaboration with Scotty Hardwig and Charles Nichols. (November 16, 2022).
- 2022 Oaxaca FilmFest, Oaxaca, Mexico. Submitted Time Garden: Skull Bridge. In collaboration with Scotty Hardwig and Charles Nichols. (December 8, 2022).

**B. Accepted upcoming**

- 2022 *Daedalus Dreams*, Moss Arts Center, Blacksburg, VA. We will debut this new performance work locally, to be followed by a national tour. In collaboration with Scotty Hardwig and Eric Handman. (November).  
Self-produced performance.
- 2022 *World Stage Design 2022 & Scenofest*, Calgary, Alberta, Canada. Screening of *Body, Full of Time*. In collaboration with Scotty Hardwig, Nate King, Caleb Flood\*, and Estefania Perez-Vera\*. Responsible for visual direction, programming, and projection. (August 11).  
Juried screening.



**IX. Other Pertinent Activities**

**A. Membership in professional societies**

2017 - College Art Association, Member

2017 - New Media Caucus, Member

2017 - Center for Human Computer Interaction, Virginia Tech, Member

2017 - Institute for Creativity, Arts, and Technology, Virginia Tech, Faculty Affiliate