- **Project Title:** MAGIC Tour of Mitchelville's Ghosted Structures: Memories of the Elders and Echoes of the First Gullah Town
- **Institution:** North Carolina State University, College of Design, Department of Media Arts, Design and Technology.
- **Project Director:** Christopher Maraffi, cmaraff@ncsu.edu
- **Grant Program:** NEH Digital Projects for the Public: Prototyping Grants (20240612-MD-MN-MT)

Application Narrative

A) Nature of request

North Carolina State University (NCSU) requests an NEH Digital Projects for the Public Prototyping-level grant in the amount of $100,000 to develop over a one-year period an interdisciplinary educational program and prototypes for interpretive exhibits about Historic Mitchelville Freedom Park (HMFP), titled *MAGIC Tour of Mitchelville's Ghosted Structures: Memories of the Elders and Echoes of the First Gullah Town* (formerly *Mitchelville AR/XR Tour*). Mitchelville was the first self-governing town of formerly enslaved Gullah-Geechee people in the eastern United States during the Civil War (founded late 1862), a central feature of the Port Royal Experiment (1862-1865) in African American self-reliance during the war and into the Reconstruction era (1863-1877), and now a heritage site and park on Hilton Head Island, South Carolina. We will develop college-level curriculum for designing humanities exhibits using emerging technologies related to HMFP, with prototypes designed to enhance "ghosted structures" installed on an interpretive trail in the park, and a summer school curriculum to enhance HMFP's year-round *Modeling our Ancestors to Generate Influence and Change* (MAGIC) program in their new classroom-lab (J on HMFP Master Plan), initially funded by the Mellon Foundation and the State of South Carolina. We have assembled a diverse team of digital media faculty and humanities experts from the UNC system, Clemson University, and University of South Carolina Beaufort, to collaborate with local leaders and preservationists from the greater Gullah-Geechee community in Beaufort County. We propose developing curriculum for an undergraduate course piloted in spring 2025 that immerses design students in the rich history and culture of Mitchelville through a spring break trip to HMFP for conducting Gullah Geechee elder interviews and site data collection, and tours of related sites around Beaufort County like the Penn Center, Reconstruction Era National Historical Park, and the new Harriet Tubman Monument. Students would learn the humanities content through experts in the field, including our co-PI historian J. Brent Morris who is writing a book on Mitchelville and who has directed five NEH teachers' institutes focused on Reconstruction and the story of Mitchelville, and then will translate those experiences to prototypes of interpretive exhibits for the park. In addition to this semester-long course, we propose prototyping a similar curriculum for a college-accredited summer intensive at HMFP for local high school students in their MAGIC program. HMFP staff prepare MAGIC interns to be park docents by teaching them the humanities content throughout the academic year, and then in summer workshops we will teach them digital media design skills for developing and maintaining park exhibits that can lead to a career path in a high-tech field.

Directed by the NCSU College of Design faculty in Media Arts, Design and Technology (MADTech), the goals and intended outcomes of this project are to create a self-sustaining framework for teaching students how to apply the latest human-computer interface (HCI) research in designing hyper-reality exhibit prototypes that will augment Mitchelville's new interpretive structures and

exhibit spaces. Hyper-reality is a platform independent experience design concept that applies arts techniques with emerging technologies to simulate the illusion of an impossible or magical experience, such as traveling back in time to witness the freedmen's construction of Mitchelville or interact with a historical figure like Harriet Tubman in nearby Fort Howell. Our interdisciplinary design approach draws from multimodal research in theater, games, and cinema, applying emerging technologies such as generative AI, photogrammetry, performance capture, and virtual production to create hyper-real representations of both living Gullah-Geechee elders and historical figures like Charlotte Forten Grimke (1837-1914), and General Ormsby Mitchel (1810-1862). Park locations will be selected to feature a life-sized virtual tour guide that greets visitors and contextualizes the interpretive scenes, such as abolitionist Charlotte Forten Grimke introducing visitors to the first public reading of the Emancipation Proclamation on January 1st 1863 at a live oak grove in nearby Port Royal's Camp Saxton, with attendance from the first Gullah Geechee volunteer Union regiments and other "contrabands'' from around Port Royal including Mitchelville residents, followed by an evening celebration with children performing Gullah Geechee Ring Shout dancing as described in Grimke's journals. Because primary sources will be the basis of all character performances, MADTech and MAGIC students will learn to interpret the humanities content for creating scripts and directing live actors in motion capture sessions. Led by our Masters of Art and Design (MAD) program faculty and teaching assistants, hands-on workshops will show students how to gather data in the field, like shooting 360 photography in the park to develop virtual simulations of the new "ghosted structures" constructed where Mitchelville's homes originally stood, and how to capture interviews of Gullah-Geechee elders using photogrammetry to create hyper-real Metahumans that will interpret their personal histories in a new interactive documentary form. Graduate students from Clemson's Digital History PhD program will be recruited to use Elder data for research on how community memory and oral histories can reduce gaps in the historical record for places that no longer exist, and NCSU's Doctor of Design students will be recruited to design new ways of interpreting the data for the public on the project website.

B) Humanities content

The humanities content for this project is to visualize Civil War and Reconstruction era histories of Mitchelville's founding and construction in late 1862 on Hilton Head Island and situate the first self-governing freedmen's town within the greater struggle for freedom being waged by the United States army in surrounding Beaufort County. The Battle of Port Royal Sound in November 1861 secured the Beaufort County Sea Islands for the Union army, making Hilton Head the headquarters for the Department of the South under General David Hunter, followed by General Ormsby Mitchel in September 1862. Both Hunter and Mitchel were ardent abolitionists, with Hunter issuing General Order Number 11 in May 1862 to emancipate enslaved Africans in South Carolina, Georgia and Florida (later rescinded by President Lincoln until the preliminary Emancipation Proclamation announcement in September that same year). In October 1862 at Hilton Head's First African Baptist Church, General Mitchel announced plans to establish an experimental town near Fort Howell as a new home for the hundreds of formerly enslaved people that were flocking to Hilton Head Island. The town would be self-governing, with offices from sheriff to mayor elected by its residents. Rather than barracks, the town's residences would be single-family homes. Mitchel even held a contest between Army engineers and "contraband"

builders to see who would build the town's structures (including churches and at least three schools). The freedmen won the contest and Mitchelville was developed as a central example of the Port Royal Experiment and a rehearsal for post-war Reconstruction where African Americans would be educated and active citizens enjoying the freedoms of and contributing to a re-United States of America. The historical significance of Mitchelville is well documented in the Library of Congress, from photographers sent by the Lincoln administration as well as from popular news magazines like Harper's Weekly, which we are using to create digital representations of the town structures and residents. However, much of the public is not familiar with the history of Mitchelville or the Port Royal Experiment in Beaufort County, even though this humanities content is important for understanding contemporary race relations and so-called identity politics today. Part of this lack of public knowledge was due to active suppression of these anti-slavery narratives throughout the twentieth century, and which are still being misrepresented as "divisive concepts" in the 21st century to avoid being taught in K-12 classrooms.

Though historians like Eric Foner, Henry Louis Gates Jr., and our humanities adviser and co-PI J. Brent Morris have highlighted emancipation narratives related to Beaufort County in print and media, such as the PBS documentary *Reconstruction: America After the Civil War*, SCETV's NEH-funded 360-video site *Reconstruction 360*, and Morris' forthcoming book on Mitchelville, most treatments focus on the time period following the end of the Civil War in 1865. Our project reaches further back into the origins of Reconstruction in America to the aftermath of the Battle of Port Royal Sound in 1861 and highlights Beaufort County emancipation narratives featuring Black heroes that start early the next year of 1862. These stories, which in addition to Mitchelville's founding as part of the Port Royal Experiment, include Robert Smalls' daring escape from Charleston. Smalls was a Gullah Geechee man enslaved on a Confederate military ship named the *Planter*, and on the night of May 12th he impersonated the captain to commandeer the ship and sail with his family towards the Union blockade and past Confederate sentries in Charleston harbor. Smalls ended up being a celebrity and war hero, piloting many Union ships into battle and eventually becoming the captain of the same ship on which he had been enslaved. After the war Smalls became a Black hero of Reconstruction as one of the first Gullah Geechee elected to the South Carolina House of Representatives in 1868. We will include the histories of Robert Smalls and other Black heroes like Harriet Tubman, who was sent to Hilton Head Island in 1862 as a scout, nurse and mediator between the Union commanders and the Gullah Geechee people, because they trusted the "Black Moses of the North." Interpreting these wider Lowcountry narratives will help to contextualize Mitchelville's important place in history, and connecting that history to the personal memory of Gullah-Geechee elders will interpret the relevance of Mitchelville as a heritage site today. We have begun interviewing elders and leaders in the community, such as native islander and retired Beaufort County director and councilman Mr. Morris Campbell, descendent from one of the original Hilton Head families dating back to Mitchelville that conducts Gullah Heritage Trail Tours through the park today. Our interview process goes beyond standard documentary video, where we use depth cameras and AI motion capture software to record facial and body data that can be used to create a hyper-real 4D representation of each subject. Elders retain full ownership and control of their data for future use and representation.

Humanities Themes:

The interpretive humanities themes our project will explore in the prototyping phase are:

1. **Interpret Mitchelville as the birthplace of freedom during the Civil War and Reconstruction:** As the first self-governing town for formerly enslaved people and a central example of the progressive Port Royal Experiment in Beaufort County from 1862-1865, Mitchelville was the symbolic birthplace of African American freedom and Civil Rights by becoming a model for the Freedmen's Bureau Reconstruction efforts after the war. We will work with our archeology and history advisers to incorporate the latest historical interpretations and original research into our project, as well as draw from local resources like the [Reconstruction Era National Historical Park](#), [Beaufort District Collection](#) and USCB's [Institute for the Study of the Reconstruction Era](#) to contextualize Mitchelville's place in the larger struggle of Reconstruction and Civil Rights. As our co-PI Brent Morris writes in his 2023 edited anthology of new Reconstruction scholarship, this revolutionary era "thoroughly remade and modernized America and laid the foundation for the 'Second Reconstruction'—the Civil Rights Movements of the 1950s and 60s".

2. **Interpret Beaufort County emancipation histories through digital platforms that make underrepresented Black heroes come alive at Mitchelville today:** Our interactive and immersive hyper-reality prototypes will feature virtual tour guides who step out of the nineteenth century to break the fourth wall and speak directly to visitors, in the theatrical style of Hal Holbrook's *Mark Twain Tonight* and Walt Disney's *Great Moments with Mr. Lincoln*–almost as living primary sources. Virtual tour guides will embody design frameworks adapted from participatory theater to engage visitors in a performative role and contextualize our interpretive scenes. We will collaborate with digital humanities adviser Andrew Britt to hire NC School of the Arts actors to perform Black heroes like Charlotte Forten-Grimke, Harriet Tubman, Robert Smalls, and Frederick Douglass. Our virtual production process will capture the actor's performance onto hyper-real super-puppets known as Metahumans that have a liveness and presence that has only recently been possible using emerging technologies like AI and game engines.

3. **Interpret Mitchelville's Gullah-Geechee heritage as relevant today through shared cultural memory:** The Gullah-Geechee inhabitants of Mitchelville had unique cultural practices that fused storytelling with music and dance, as described by accounts throughout Beaufort County during the Port Royal Experiment. One of the oldest surviving practices is the Ring Shout, a circular call-and-response dance with a "shouter" who tapped percussive rhythms with a stick because traditional drums were banned in South Carolina since the Stono Rebellion (1739). Our adviser [Anita Singleton-Prather](#) is a well-known Beaufort-based Gullah Geechee artist performing throughout the United States as Aunt Pearlie Sue with her Gullah Kinfolk singers (including at regular heritage festivals at Mitchelville Freedom Park). Our African Diaspora dance adviser, UNC-Charlotte faculty [Tamara Williams](#), has researched and performed in the Ring Shout tradition. We will work with our advisers and the Gullah Geechee community to design

artistic interpretations of these practices, and our virtual tour guides will contextualize these traditions as becoming a source of inspiration for popular Black music and dancing in the Harlem Renaissance (1918-1930s). Throughout the prototyping process, we will schedule community meetings through our contacts at Historic Mitchelville Freedom Park and Coastal Discovery Museum, and gather wider feedback from public meetings hosted by the Gullah Geechee Cultural Corridor Commission and at conferences like the *International Gullah Geechee and African Diaspora* conference (IGGAD), where we presented the discovery phase of this project in 2020.

Interpretive Scenes:

We have identified histories related to Mitchelville or the greater narrative of emancipation and freedom in surrounding Beaufort County that have potential for developing into interpretive scenes. We will choose a number of these narratives to develop into example prototypes for our educational programs, along with virtual tour guides to introduce and contextualize each scene. Students will learn humanities content through adapting primary sources and interviews to the scripts and performances of Metahuman figures in hyper-reality scenes throughout the park.

- **Introduction to Mitchelville's Ghosted Structures and Memories of the Elders (with virtual guide Ahmad Ward, Executive Director of HMFP):** We have already started working on a prototype for our opening scene which introduces visitors to the ghosted structures recently installed in the park's main area. Funded by a private grant through a course agreement with HMFP, our PI Topher Maraffi conducted a performance capture session with Executive Director Ahmad Ward in their offices and shot the ghosted structures in the park with a 360 camera. Maraffi also interviewed two Gullah-Geechee elders, Mr. Campbell and Mrs. Green, using specialized AI recording software that volumetrically captured their 3D likenesses and movements in-sync with their voices. Each elder was asked about their memories of growing up as a member of the Gullah-Geechee community on Hilton Head Island and how they remember Mitchelville over the years. Then Maraffi processed the data in a three-week MADTech summer intensive course with two undergraduate students and one graduate teaching assistant. Each student used photogrammetry software to convert volumetric video data of Ward and the elders to develop a hyper-real Metahuman of each figure, and then processed the motion capture data in a game engine to animate the figures in a virtual 360 simulation of the park. The real-time 3D scene was initially rendered to a video demo for this submission, but the game engine simulation will be exported to multiple platforms, including location-based augmented reality experiences for park visitors, screen-based interactive exhibits in Mitchelville's new classroom-lab, and 360 video on the Internet for wider exposure to the public.

- **General Mitchel's Founding of Mitchelville (with virtual guide a living Gullah-Geechee elder like Morris Campbell):** One scene we would like to develop is the founding speech General Ormsby Mitchell made on October 12th 1862 at the newly built First African Baptist church on Hilton Head Island. In this speech he announced plans for an

experimental Freedmen town to be developed near the church and protected by Fort Howell. He offered a vision of citizenship for the future residents of Mitchelville (officially named in his honor after his death less than a month later). Mitchel expected the town would answer the question the entire country was asking: "What will you do with the black man after liberating him?" The town would be the shining example of what was possible in a post-bellum–and post-*slavery*–nation. Of the freedman, Mitchel declared his intention to showcase him as "a useful, industrious citizen. We will give him his family, his wife, his children – give him the earnings of the sweat of his brow, and as a man, we will give him what the Lord ordained him to have. This experiment is to give you freedom, position, homes, your families, property, your own soil. It seems to me a better time is coming … a better day is dawning." He repeatedly emphasized that if the experiment was successful, it would be implemented across the whole country. For this scene we will rely on historic photographs of the church, Mitchel, and the original transcript of his speech. The virtual tour guide for this scene would be a Gullah-Geechee elder such as Morris Campbell who is a frequent tour guide in the family business Gullah Heritage Trail Tours.

- **First Emancipation Day Celebration (with virtual guide Charlotte Forten-Grimke):** Another potential scene for our prototype phase is to interpret an important event attended by thousands of freedmen in the Beaufort area–including nearby Mitchelville–which was the first public reading of the Emancipation Proclamation in the South on January 1st 1863 at Camp Saxton (headquarters of the 1st South Carolina Volunteer Infantry). Colonel Thomas Wentworth Higginson of that first Gullah Geechee regiment wrote of the celebration held in a large live oak grove near the fort renamed [The Grove of Gladness](): ""When some future Bancroft or Motley writes with philosophic brain and poet's hand the story of the Great Civil War, he will find the transition to a new era in our nation's history to have been fitly marked by one festal day, — that of the announcement of the President's Proclamation, upon Port-Royal Island, on the first of January, 1863." The virtual tour guide will be Charlotte Forten-Grimke, who was present at this festive event and later wrote an account of the celebration in her journal. We intend to adapt this primary source for dialogue, using [period illustrations]() in the Library of Congress and [published scholarship]() of our co-PI Brent Morris to develop the scene, as well as hire actors to represent Forten-Grimke through performance capture technology.

- **Gullah-Geechee Culture of the Women of Mitchelville (with virtual guide Aunt Pearlie Sue):** Our co-PI Brent Morris as well as our archeology adviser, [Katie Seeber](), have done original research on the women inhabitants of Mitchelville. One scene would be to simulate a day in the life of Mitchelville using period photographs to "skin" the ghosted structures in the park and then populate the environment with residents and a Gullah Geechee virtual tour guide in the form of Aunt Pearlie Sue as performed by Anita Singleton-Prather. With many of Mitchelville's men off fighting the war, the women of the town played remarkable roles maintaining the most important functions of the community, including leading the cultural practices of the rhythmic music and Ring Shout dances. These had provided direct ties to their ancestors as far back as the seventeenth century, and after emancipation became a strong religious and secular influence of

greater Southern Black culture. University of South Carolina music history professor Julie Hubbert contends that Gullah-Geechee influenced ragtime music and dances traveled to New York City by way of the Charleston-based Jenkins Orphanage Band starting in the 1890s, and spawned "The Charleston" cultural phenomenon that exploded out of Harlem in the 1920s as jazz dancing. Dance historians have shown that even more popular swing dance "crazes" from the 1930s to '50s evolved from Charleston steps that subsequently influenced 1980s breakdance, hip hop, and even shuffle dance on Tik Tok today.

- **Tales of Black Civil War Heroes from Surrounding Beaufort County, including Robert Smalls and Harriet Tubman (with virtual guide Frederick Douglass):** Because Hilton Head Island was the headquarters of Union operations in the South and protected by several forts, Mitchelville was a refuge close to the action in the war. Robert Smalls sailed out of Hilton Head and Harriet Tubman worked in the nearby forts; both underrepresented narratives featuring Black heroes that touched Mitchelville residents. Smalls was a Gullah Geechee war hero and became one of the first Black statesmen. The tale of his self-emancipation from slavery in early 1862 by piloting a Confederate warship out of Charleston harbor would have been known to the people of Mitchelville. Smalls was eventually promoted to be Captain of the ship on which he had been enslaved, the Planter, and from that same deck watched the US flag raised again over Fort Sumter in Charleston harbor in 1865. In June 1863, Tubman led the 2nd South Carolina Volunteer Infantry composed of Freedmen soldiers and commanded by Colonel James Montgomery to free some 750 enslaved Africans from plantations up the Combahee River in Northwest Beaufort District. Tubman's experience with the underground railroad made her an excellent scout for the Union army, and her reputation as the "Black Moses of the North" calmed enslaved people she encountered during raids because they immediately trusted her. We will reference contemporary reports of the raids as well as Tubman's own captivating account recalled to her biographer Sarah Hopkins Bradford in 1869. We have used AI tools to design a virtual Frederick Douglass tour guide for this scene because he knew both Smalls and Tubman, and publicly wrote about them.

C) Project format
Our project will prototype an interdisciplinary curriculum and sample interpretive scenes for the new ghosted structures and classroom-lab at HMFP, teaching students how to enhance these physical spaces with hyper-reality interpretive scenes that focus on the history and heritage of Mitchelville. According to Curtis Hickman's book *Hyper-Reality: The Art of Designing Impossible Experiences* (2023), hyper-reality design is both multimodal and platform independent, so our curriculum will teach a virtual production process that can be deployed to a variety of interfaces, including VR headsets, AR smartphone apps, and screen-based exhibits. This aesthetics-first approach to designing our interpretive scenes will allow students to adapt to rapidly changing technologies, and adopt the latest industry tools for developing hyper-reality experiences at HMFP. Our PI Topher Maraffi's MADTech students currently use photogrammetry to design Metahumans of themselves that they then perform using motion capture to develop dramatic scenes in a 3D game engine. Applying this process to historical figures or living elders in our interpretive scenes has the potential to go beyond documentary or 360-video for expressive

liveness, and [initial tests can be viewed on our project website](#). This research builds on previous VR heritage work done by members of our digital media team, including NCSU's [Virtual Martin Luther King Jr. Project](#) (2019), Derek Ham's [I Am A Man](#) (2018) and [Barnstormers: Determined to Win](#) (2022), and Todd Berreth's [Tangible Interactive Table for Architecture](#) (TITA). Photogrammetry using Epic Games' [Reality Capture](#) and [Unreal Engine](#) software will be learned by students to make hyper-real 3D models of artifacts and [Metahuman](#) figures related to Mitchelville, and [Quixel Megascan](#) assets will be used to spatially design interpretive scenes at park locations. All of the software is free for academic and nonprofit use, including the new [Metahuman Animator](#) for facial capture of Gullah Geechee elders. While some motion capture hardware like Rokoko inertial suits can be costly, we are testing smartphone applications such as [MoveAI](#) that enable short capture sessions at a minimal subscription fee. Some of the platform prototypes we may deploy our scenes to are:

- **Ghosted Structure "Holograms"**: deploying interpretive scenes with life-sized historical figures and Metahuman versions of living Gullah Geechee elders to outdoor augmented reality (AR) experiences at HMFP using smartphone apps and/or mixed-reality headsets. We are also experimenting with an indoor hologram experience using the large LED wall in our virtual production studio.
- **Tangible Interactive Table for Archeology and Humanities (TITAH)**: a tabletop touchscreen interface which will enable visitors to virtually navigate on a 360 tiny-world representation of the park to interact on a large wall-monitor with a 3D world simulation of Mitchelville augmented with our interpretive scenes and virtual tour guides.
- *Reconstruction Live!* **Tabletop AR Play**: modular tabletop AR applications designed to enhance classroom instruction on the Reconstruction* era that draw from live puppetry and children's miniature figure play for mobile devices and the new Tilt 5 AR platform. (*[Reconstruction Era National Historical Park](#) broad timeline from 1861 to 1900).

While some experiences like the LED wall and TITAH have a screen-based 360 interface, and others may utilize smartphones or headsets, all applications will feature hyperreal Metahuman figures developed through a virtual production pipeline that includes generative AI, photogrammetry, motion capture of live performers, and game engine interaction design.

Hyper-Reality Research for Teaching Digital Humanities

Our hyper-reality design approach applies Hickman's concepts and techniques developed for Disney-funded location-based entertainment at [VOID VR theaters](#) like *Star Wars: Secrets of the Empire* (2017) to humanities content for educating visitors on the history and culture of Mitchelville. Our interpretive scenes follow aesthetically Disney's animatronic stage shows like "Great Moments with Mr. Lincoln" and the "Hall of Presidents" while highlighting underrepresented Black Civil War heroes like Robert Smalls and Harriet Tubman. By taking a theatrical approach we can contextualize these interpretive narratives by having historical figures break the fourth wall and speak directly to players, as pioneered in Disney's animatronic productions and live stage shows like Hal Holbrook's "Mark Twain Tonight!". The historical figures created by Disney Imagineers used an early form of analog motion capture technology to

simulate semi-realistic movement of a stage actor in a life-sized animatronic. However, they could never achieve the hyper-realism of a digital puppet using performance capture data from an actor. AI enhanced tools to create Metahumans are a recent development and have not previously been available for creating interactive historical figures in applications for educating the public. Using primary sources to simulate Black heroes like the abolitionist Frederick Douglass in his own words can have a powerful effect, as demonstrated by the hyper-real experience of Martin Luther King Jr. performing the "I have a dream" speech in [Time's The March](#) (2020) VR museum installation.

Interdisciplinary Curriculum for NCSU MADTech Spring Course and MAGIC Summer Intensive:

We propose to prototype a curriculum for an interdisciplinary NCSU MADTech course where undergraduate students will learn the hyper-reality design process and technical production pipeline for creating the interpretive scenes at HMFP. Our PI Topher Maraffi will teach the course with MAD graduate TAs in the spring semester, and then will take a week-long field trip with the students to Beaufort County over spring break to immerse them in Civil War and Reconstruction history with our co-PI J. Brent Morris and Gullah-Geechee culture from HMFP staff. While on Hilton Head Island, students will meet with Mitchelville staff, take the Campbell's [Gullah Heritage Trail Tour](#), and speak to our Archeology advisor Katie Seeber at the [Coastal Discovery Museum](#). Students will also take day trips to nearby Beaufort and Saint Helena Island to speak to experts at the [Reconstruction Era National Historical Park](#), the first school for Gullah-Geechee founded in 1862 at the [Penn Center](#) as part of the Port Royal Experiment (and where MLK Jr wrote part of his "I have a Dream" speech), and the new [Harriet Tubman Monument](#). Students would also gather data in the field of elders, artifacts, and site locations using interviews, photogrammetry and motion capture to develop interpretive scene assets back at NCSU. The curriculum we develop for our spring MADTech course will inform the prototype of a summer intensive workshop for HMFP's year-round [RBC Heritage-funded](#) youth leadership program called *Modeling our Ancestors to Generate Influence and Change* (MAGIC). Our summer school program would be modeled after the successful Museum of Discovery and Science (MODS) [App-titude program](#) our PI Topher Maraffi taught at Florida Atlantic University from 2019-2021. A collaboration between HMFP, NCSU MADTech, Clemson, and USCB Computer Science would be prototyped to be team-taught by faculty from multiple universities in the park's new classroom lab [funded by the Mellon Foundation](#). A summer program would not only help to maintain, develop and sustain the park's exhibits beyond the grant period of performance, it would offer young people in the local community multiple career paths in high-tech fields that have traditionally lacked diversity.

D) User-generated content
We will archive the Gullah-Geechee elder interviews we collect at the site, but we may also expand that archive to include community submitted memories by descendants of Mitchelville.

E) Audience and distribution
Historic Mitchelville Freedom Park is currently free to the public, and with special events, can have up to 10,000 visitors per year. Upon completion, prototype exhibits will be initially housed

in the new classroom lab structure in the park, where they will be used to educate visitors and students on park history and to demo the emerging technologies being used to interpret that history in our proposed summer educational program. In addition to installing prototypes in the park, we will create an NCSU web site similar to the [Virtual Martin Luther King Jr. Project](#), and present project results at digital heritage conferences like [IGGAD](#) and at meetings of professional associations like the Association for the Study of African American Life and History, the American Historical Association (AHA), and the Organization of American Historians. Our PI is currently scheduled to present this project in January 2025 at the AHA Annual Meeting panel "The Power of Immersion: Experiencing Histories of the Black Diaspora through Virtual and Augmented Reality" in New York City.

F) Rights, permissions, and licensing

Discovery-phase preproduction and prototype designs were created by Topher Maraffi and his FAU/NCSU students using open-source software and freely available collections like the Library of Congress, so no permissions or licensing was required for creating the design document. At the prototyping stage we will continue to create original interpretive scenes based on non-copyrighted or creative commons licensed source material. Data recorded of elders and artistic performers for animating figures in our interpretive scenes will be owned by the performers and licensed for use in HMFP public exhibits.

G) Humanities advisers

- **Historic Mitchelville Freedom Park (HMFP)**, [Executive Director Ahmad Ward and Director of Programs and Interpretation Joyce Wright](#) fully support this project, and will work closely with our digital media team in developing our prototype exhibits.
- [**J. Brent Morris**](#) **(Co-PI)**, PhD., Dr. J. Brent Morris is an authority on the histories of slavery and emancipation in America. He is Professor of History at Clemson University and founder of the Institute for the Study of the Reconstruction Era. His prize-winning publications include *Oberlin, Hotbed of Abolitionism: College, Community, and the Fight for Freedom and Equality in Antebellum America* (2014), *Yes Lord I Know the Road: A Documentary History of African Americans in South Carolina, 1526-2008* (2017), *A South Carolina Chronology* (2020), *Dismal Freedom: A History of the Maroons of the Great Dismal Swamp* (2022), and *Reconstruction Beyond 150: Reassessing the Revolutionary New Birth of Freedom* (2023). Brent was the 2010 recipient of the SC Historical Society's Malcolm C. Clark Award, was 2016 USC Breakthrough Star for Research and Scholarship, and the 2018 Award of the Order of the South, the highest award of the Southern Academy of Letters, Arts, and Sciences.
- **Andrew Britt**, PhD., Dr. Andrew G. Britt is a historian of Brazil and digital public scholar at the UNC School of the Arts. His work examines the reproduction of racialized inequalities in the aftermath of emancipation, particularly in so-called "post-racial" societies. His book manuscript, The Paradoxes of Ethnoracial Space in Sao Paulo, 1930s-1980s, elucidates how the creation of ethnoracialized neighborhoods in mid-twentieth century Sao Paulo both deepened racialized inequalities and bolstered discourses of multiracial harmony.

As a digital public historian, Britt works at the intersection of spatial computing and history, especially on mixed reality and collaborative mapping projects that aim to advance racial equity in contexts throughout the Americas. His work has been funded by the Social Science Research Council, the American Council of Learned Societies, and the Fulbright-Hays program.

- **Antwain K. Hunter**, PhD., Antwain K. Hunter is an assistant professor in the Department of History at the UNC-Chapel Hill and works primarily in North American Slavery. He earned his PhD in History at the Richards Civil War Era Center at Penn State and taught at Butler University for eight years before joining the UNC faculty in 2022. Hunter's current project, A Precarious Balance: Firearms, Race, and Community in North Carolina, 1729-1865, examines the community, family, and legal dynamics of free and enslaved black people's firearm use. He has published in the North Carolina Historical Review, the Journal of Family History, and the Journal of Military History. Hunter is at the beginning stages of two projects—an article length comparative look at black people's firearm use in the Colonial Carolinas and Jamaica and a book length examination of vice and race in the US South during the last half of the nineteenth century.

- **Susanna Lee**, PhD., NCSU CHASS historian Susanna Lee teaches the history of the American Civil War and Reconstruction. She earned her BA in History at the University of California, San Diego and her MA and PHD in History from the University of Virginia. Her book Claiming the Union (Cambridge, 2014) focuses on southern citizenship after the Civil War. She is currently working on books on civilians in the American Civil War and on the US-Dakota War. She has also worked in the digital humanities, including serving as project manager for *The Valley of the Shadow: Two Communities in the American Civil War*.

- **Tamara Williams**, MFA., UNCC dance faculty Tamara Williams' performing career includes work with Alpha Omega Theatrical Dance Company, David P. France Dance company, Errol Grimes Dance Group, Millicent and Company, Angela's Pulse, Maverick Dance Experience, and Urban Bush Women's apprentice company. Her choreography has been performed nationally and internationally including Serbia, Switzerland, Trinidad & Tobago, Jamaica, Mexico, and Brazil. In 2011, Williams created Moving Spirits, Inc., a contemporary arts organization dedicated to performing, researching, documenting, cultivating, and producing arts of the African Diaspora. Williams' research has been published in The Dancer-Citizen Journal and her book *Giving Life to Movement, analyzing African-Brazilian dance histories and cultures*, was published by McFarland Press in 2021. Her monograph, *The African Diaspora and Civic Responsibility: Addressing Social Justice through the Arts, Education and Community Engagement*, is currently under contract with Lexington Books. Williams' research on African American Ring Shout traditions has been disseminated at several colleges and universities in the United States and Brazil. Her article, *Reviving Culture Through Ring Shout*, was published in the scholarly journal, *The Dancer-Citizen*.

- **Katherine Seeber**, PhD., Katie Seeber is an anthropological archaeologist and public scientist at Coastal Discovery Museum on Hilton Head Island whose primary research interests center on community and heritage archaeology, landscape archaeology, and memory and materiality studies. She practices community-based research protocols and is invested in using archaeology as a tool for social change, education, and utilizing archaeological data to engage contemporary communities with the past. As the Director of the Community Archaeology program at the Historic Mitchelville Freedom Park, she has been working on various projects for the past seven years, including Historic Mitchelville Freedom Park, the Sea Pines Shell Ring (a late archaic site), and Zion Chapel of Ease (an antebellum chapel and cemetery), and the Barnwell Tabby Ruins (with Dr. Kim Cavanagh). Her work in these projects is most often aimed at developing ethical, sustainable, and community driven elements to each project.
- **Anita Singleton Prather**, MEd., Anita Singleton Prather, a native of the Sea Islands of Beaufort, S.C. is the founder and artistic director of the musical performance group Gullah Kinfolk Traveling Theater. She has written and co-produced *Tales from the Land of Gullah* and "Circle Unbroken: Gullah Journey from Africa to America,", broadcast nationwide on PBS and featured on her award-winning DVD. She partnered with South Carolina Educational Television (SCETV) to create an award-winning interactive [children's website](#), that featured her animated character, Aunt Pearlie Sue. In 2007, Ms. Singleton Prather collaborated with the Children's Museum of Houston to curate the 20,000 sq. ft. interactive traveling exhibition to introduce Gullah culture to young people throughout the United States and Canada. She has appeared on CNN's *United Shades of America* and *The Cooking Channel* sharing Gullah recipes. Ms. Singleton Prather is a curriculum coordinator for the "Education of Gullah Culture Through the Arts."

H) Project and Digital media teams

- **Christopher Maraffi (PI)**, MFA., MSc., Topher Maraffi's research is focused on the ethical design of storytelling experiences for extended reality, and adapts design principles from games, cinema and theatre arts to serious play in game engines. Topher received a National Endowment for the Humanities Digital Projects for the Public discovery grant and an Epic Games Megagrant for visualizing an augmented reality tour of Historic Mitchelville. Before joining the faculty at NC State, Topher taught preproduction, 3D animation, and game design courses at Florida Atlantic University, and founded the Media Arts concentration in Studio Arts at University of South Carolina Beaufort. He has taught master classes as a certified 3D trainer at SIGGRAPH and other international conferences and directed the technical animation courses at Full Sail University. He is the author of three popular character design books that were on Disney Animation's suggested reading list. Recent research publications include Cinergie international journal special issue on VR storytelling article *Stage Magic as a Performative Design Principle for VR Storytelling* (2021) Digital Games Research Association conference proceedings on game analysis titled *Multimodal Framework for Enhancing RPG Playfulness through Avatar Acting*

Affordances (2022) and the chapter *VR Storytelling for Social Justice and the Ethics of Playing Black Bodies* (2022) in a new interdisciplinary VR book by Vernon Press.

- **Todd Berreth**, M.Arch., Todd Berreth is an Assistant Professor of Media Arts, Design and Technology and core member of the Chancellor's Faculty Excellence Cluster in Visual Narrative at NC State University. His research and design work focuses on developing open design tool kits and projects which make cutting-edge human-computer interaction research more accessible, to enable and enrich humanities, sciences and arts communities and their efforts. He is interested in how emerging technologies, mixed and virtual reality, gaming environments, machine learning, computer vision, and other advances can help us see our world in new ways, alter our physical environments, expand our narrative-making capabilities. This work primarily involves interaction design, visual analytics and storytelling, using the breadth of computational media. He had written or exhibit in SIGGRAPH, Leonardo, AI and Society Journal, Museum of the Imperial Forum, and other interesting venues and journals.

- **William Lee Cherry**, MBA., Lee Cherry brings interactive design & project management experience as a technical producer and information architect that has managed large-scale interactive projects leveraging emerging technology, user experience design and information graphics. Currently, Lee manages and supports the research efforts within the *Experience Design Lab* and facilitates daily activities for Digital Fabrication Design within the *Information Technology Lab* at the College of Design. Researching areas of Ethical AI, Explainable AI and Understandable AI, Computer Vision, Natural Language Processing, IoT, AR/VR/MXR, Interaction Design and User Experience Design, Big Data and Data Visualizations. Recent team-focused collaborations, research projects and installations include 2022 Outreach & Engagement; Incentive Grants Award Winner - STEM-based Games against Oppression: A multi-week social-justice focused game design workshop for Raleigh youth and Co-Pi w/Dr. Lesley-Ann Noel (Art and Design), 2019 ACCelerate Creativity + Innovation Festival.

- **Patrick Fitzgerald**, MFA., Patrick FitzGerald is an Associate Professor in the Department of Art + Design in the College of Design at NC State University. He has taught courses in multimedia design. He is the co-founder of the *Intellimedia Initiative* (Department of Computer Science and College of Design) and founder of the Advanced Media Lab. Interactive team installations include exhibitions with the City of Raleigh at Dix Park (Raleigh, NC) 2019, Contemporary Art Museum (Raleigh, NC),2008, the Mint Museum, 2003, NCMA, New Britain Museum of American Art, 2004, and SIGGRAPH Conference 2020, and 2018. 2014. In 2017 his team exhibited at the ACC Accelerate Conference at the Smithsonian Museum of Natural History in Washington, DC. In 2015 he received an NSF grant to build a prototype for the visual learning application, *RECOGNIZE*.

- **Derek Ham**, PhD., M.Arch., Dr. Derek Ham is an award-winning VR director, design educator, and immersive storyteller. Since 2020 he has held the position as the Department Head of Media Arts, Design and Technology at NC State University's College of Design. Trained as an architect, he earned his PhD in Design Computation from MIT, a

Master's in Architecture from Harvard University's Graduate School of Design, and a Bachelor of Architecture from Hampton University. In his research, he continues to investigate both virtual reality (VR) and augmented reality (AR) technology to find ways these tools can expand the way we work, play, and learn. His most notable projects "I Am A Man" and "Barnstormers: Determined to Win" both share a special focus on the use of virtual reality towards the empathetic storytelling of African American history.

- **Justin Johnson**, MFA., Justin Johnson is a digital artist and game designer with over a decade of experience in both the video game industry and higher education. His professional background includes work as a lead artist, environment artist, character artist, UI designer, and level designer. He has credits on shipped titles from AAA and indie game companies both serious and entertainment based. Prior to joining the faculty in the College of Design, Justin taught digital art, computer programming, and video game design for over ten years at several colleges including building a new Simulation and Game Design program at William Peace University. His research interests include using game development tools and techniques for creating immersive experiences related to art, history, health, and storytelling.

- **Iyare Oronsaye**, MFA., DDes., Iyare E. C. Oronsaye is an Assistant Professor of Media, Arts, Design, and Technology at NC State University, specializing in 3D Animation, Virtual Reality (VR), and gaming. He obtained his MFA from the Academy of Art University and taught at the University of Northwestern for 13 years before joining the NC State faculty in 2022. Iyare is currently working on a project that investigates how the adoption of a decentralized framework can enhance creation, productivity, and inclusiveness within animation production pipelines. His research focuses on examining industry production methods and content creation within the animation field. His work has been showcased and broadcasted through various esteemed platforms, including PBS, Discovery Channel, TELLY, Netflix, Hirshhorn Museum, Disney, Minnesota Historical Society, Smithsonian's National Zoo, Chemical Education Foundation, History Channel, and the National Children's Museum.

- **Brian Canada**, PhD., University of South Carolina Beaufort Associate Professor and Chair of USCB's Computer Science Dept., who specializes in research related to cultural heritage in the Digital Humanities and tangential learning in video games. Dr. Canada has produced the award winning indie game *Bugs N' Boo Hags*, with Gullah and Beaufort County themes, and his students have developed educational games for the Reconstruction Era National Historical Park. Involved with this project since it's inception in 2016, in the prototyping stage he will be involved with local XR tour app development and testing, as well as historical preservation and 3D asset development of artifacts through photogrammetry. He will also be the local point person for the educational collaboration with Mitchelville for teaching high school students in Beaufort County XR app and game development for humanities topics.

I) State of the project
The project is in the prototyping phase, with preproduction designs and proof-of-concept tests done at FAU in 2020-21. At NCSU we have completed a revised design document with hyper-real designs of historical characters done in 2023, and an initial visualization of our Ghosted Structures interpretive scene developed in Unreal Engine with a 360 site simulation and Metahuman performances of the Executive Director of HMFP and interview excerpts of two Gullah-Geechee elders created in summer 2024. All reviewer comments have been addressed from previous submissions to the NEH-DPP prototyping-level grant in 2021 and 2023.

J) Organization profile
North Carolina State University is a land-grant institution, which means we have a duty to open the doors of education for everyone. We're a Research 1 university, recognized worldwide for our big ideas and bigger impact. And we're a public university — one that believes in community, equity, sharing what we learn and serving the greater good. Since 1887, we've strived to offer world-class teaching and research. Today, we're ranked in the top 1% of universities on the planet.

The NCSU College of Design educates students to become innovators and thought leaders while creating a community for designers, researchers, scholars and practitioners. Our vision is to pursue excellence in design education, scholarship and engagement to empower a more just, healthy, resilient, flourishing and sustainable future. At the College of Design, we have worked alongside our partners to explore solutions to any challenge – using design as a force for good and seeing problems as opportunities for change in our communities.

K) Fundraising plan
In June 2018 PI Topher Maraffi received an FAU donor seed grant of $8,400 for this project from the *Walter and Lalita Janke Emerging Technologies Fund*. Also at FAU, The PI was awarded an NEH Digital Projects for the Public discovery grant of $30,000 in March 2019 and an Epic Games Megagrant of $30K in April. In 2023, Maraffi used NCSU startup funds ($2,000) to hire an undergraduate research assistant to develop new concept art. We signed a $25,000 course agreement with HMFP in 2024 to fund through a private grant the hiring of undergraduate students and graduate teaching assistants to help the PI to process site and interview data into a new Ghosted Structures interpretive scene featuring hyper-real Metahumans.

L) Project Evaluation
We will work with NCSU DELTA to gather user experience data and evaluate the learning impact of our interpretive scenes on HMFP visitors and MAGIC/MADTech students. Because our interpretive scenes are designed to be platform independent, we will deploy online versions of our prototypes and curriculum for remote download and use in any classroom. We will also use our project website to solicit feedback and suggestions for our interpretive content from the Gullah Geechee community, and through meetings with our contacts at HMFP and the Gullah Geechee Cultural Corridor Commission.