

# AUGMENTED ARCHITECTURE WITH CSU'S ARCHITECTURAL VIRTUAL LIBRARY LARIMER COUNTY

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## PROJECT INTRODUCTION

Dr. Maria Delgado created Colorado State University's Architectural Virtual Library (AVL) in 2020. Since its inception, students have 3D scanned 36 buildings in Northern Colorado and embedded historical architecture theories, drawings, photographs, and artifacts into the 3D models to produce an immersive experience. This summer, I documented historic buildings in Fort Collins, while another Extension Intern documented those in Central City. The AVL has many projected uses, from delivering a realistic learning experience for CSU engineering and design students to serving as a marketing resource to induce increased tourism in mountain cities and providing a fun, hands-on lesson for K-12 STEAM education.

## INTERNSHIP GOALS

1. Co-select with mentor guidance which historic buildings to highlight on the Fort Collins webpage.
2. Utilize 360 video camera capabilities to capture virtual tour content of buildings via Matterport.
3. Research historic building information and embed the research into the tours via Mattertags.

## HOW DOES THIS APPLY TO YOUR EDUCATION

I am a PhD student who researches the influence of designed space on attitudes and behaviors utilizing psychological science research methods. To achieve high levels of control, I employ extended reality technology to produce meaningful knowledge about the physical environment's influence, which can advise designers. Through this internship, I have gained experience with another VR device: the 360 camera, which is utilized in much built-environment psychological research (Lee & Kim, 2021, Nakamura, 2021). Literature shows that extended realities (e.g. AR and VR) can improve learning outcomes for architecture students (Kharvari, & Kaiser, 2022). Therefore, there is a need to both expand the CSU-AVL website and to promote the integration of VR with the CSU-AVL educational platform to teach architecture students. Furthermore, the CSU-AVL argues that learning outcome benefits can expand across students of various disciplines and to learners of all ages.

## References

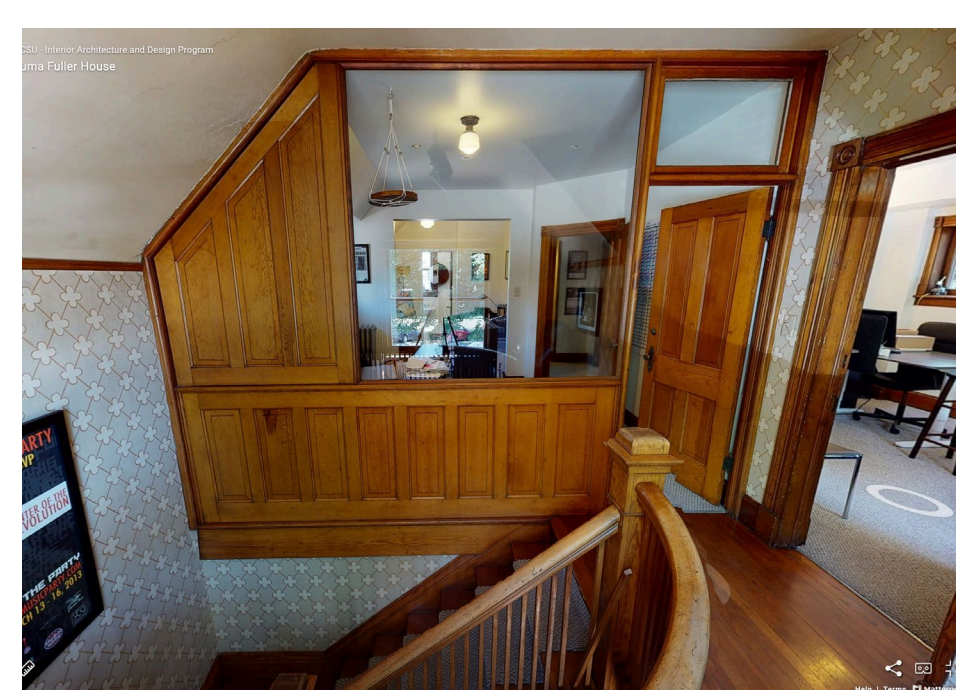
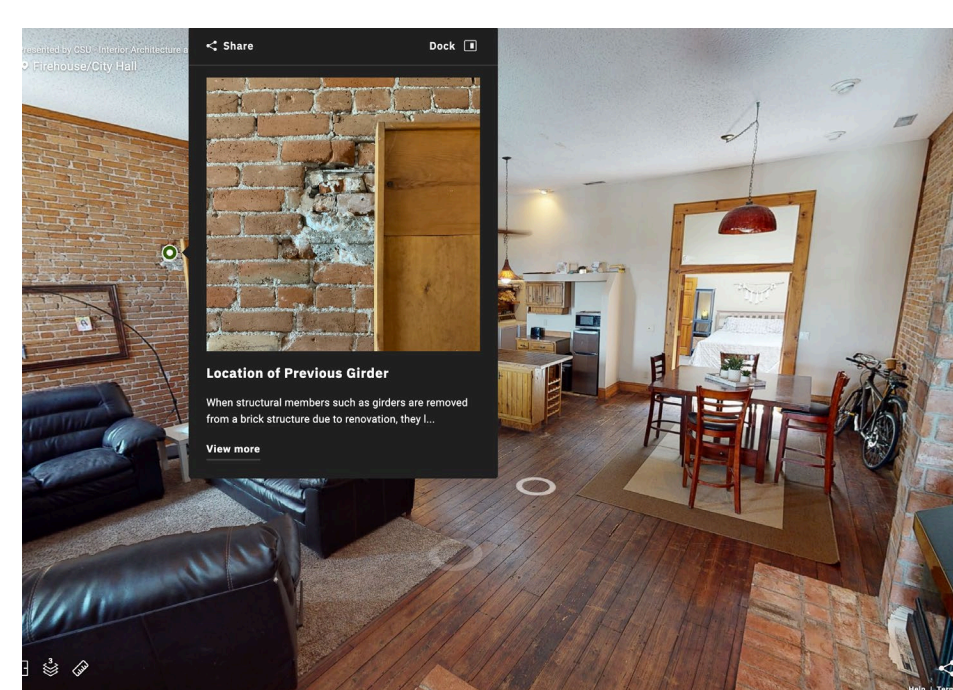
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## WHAT YOU DID

Using a Matterport Pro2 camera (Matterport, 2022), I documented nine historic buildings in Fort Collins. These structures were selected to be documented because of their accessibility, importance, and popularity in Fort Collins history. Next, I searched local and national archives for historic images, publications, and artifacts relating to each building. These findings are embedded into the respective building's immersive virtual tour.

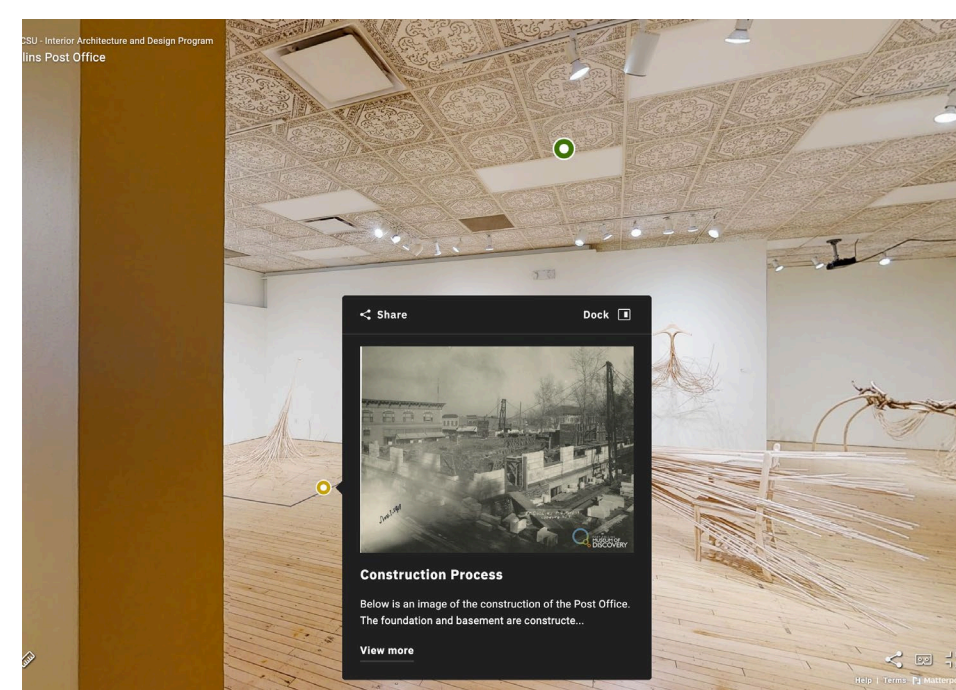
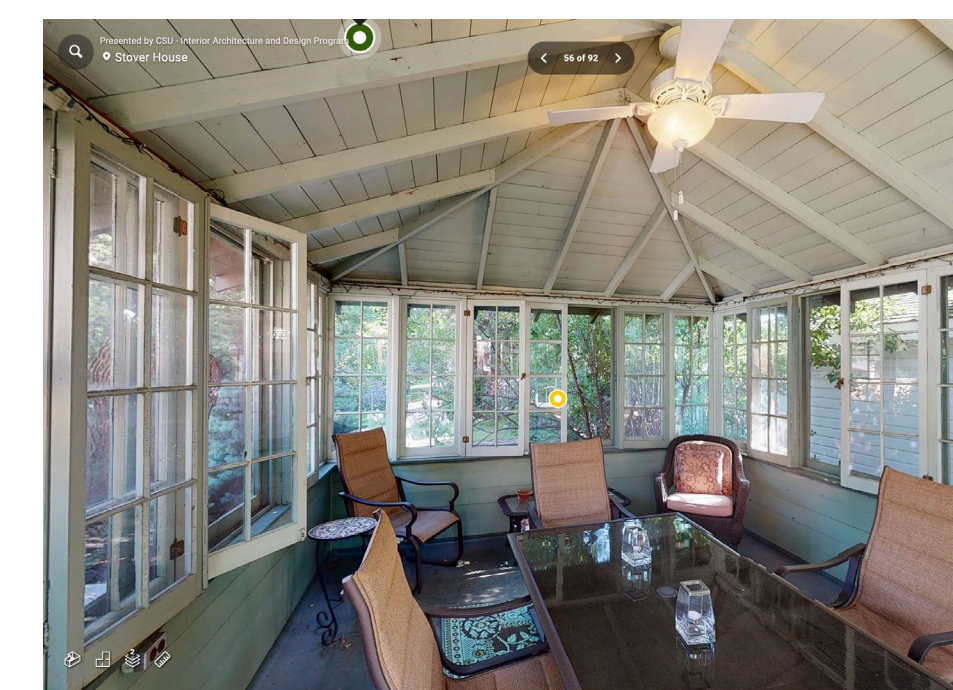
### Documented Buildings

Old City Hall



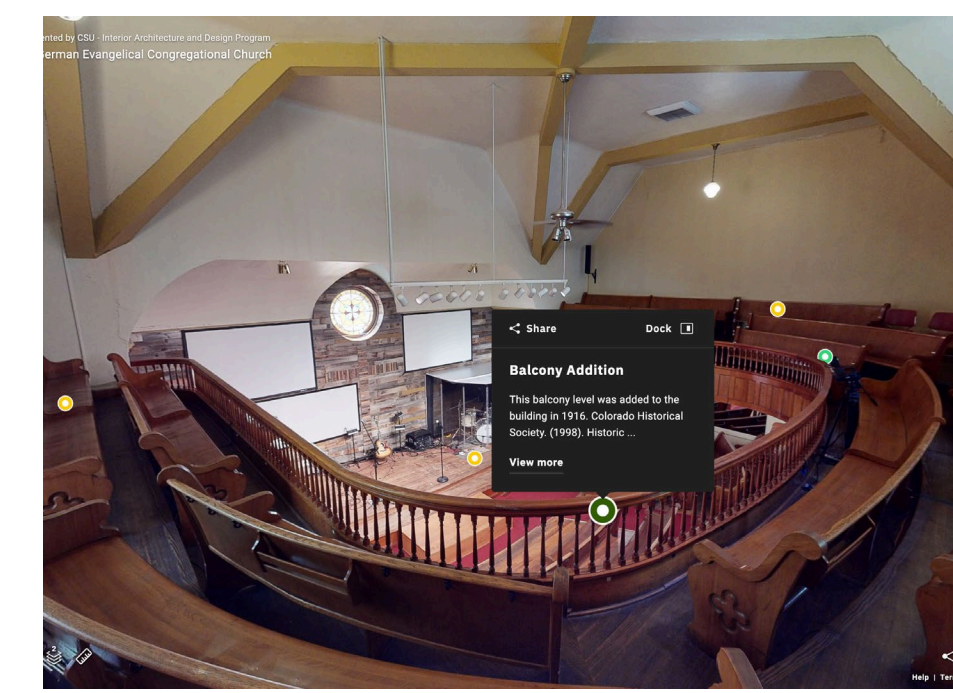
Montezuma Fuller House

Stover House



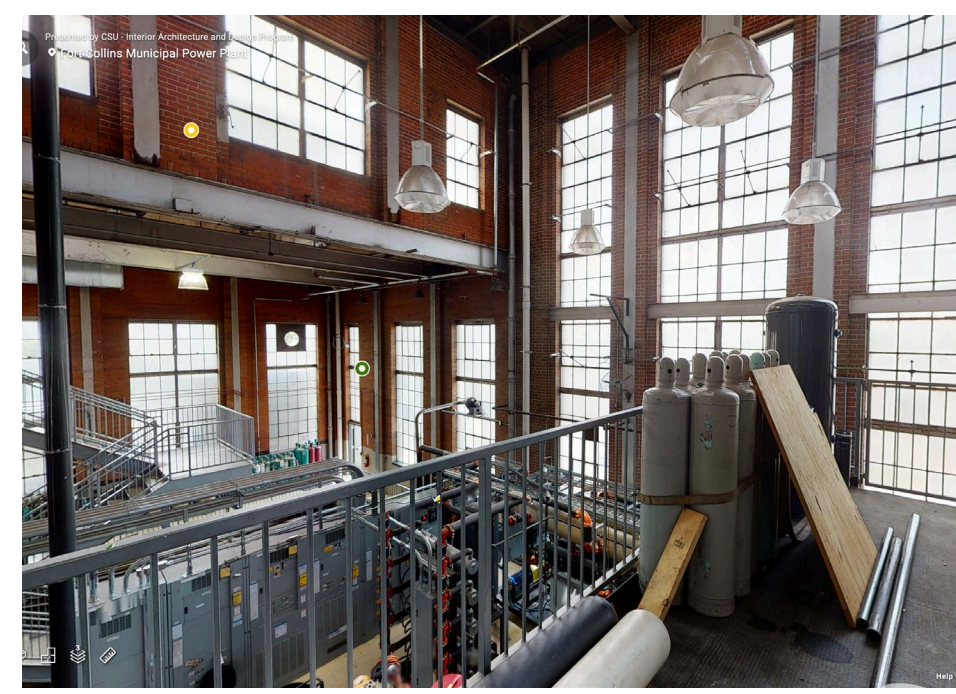
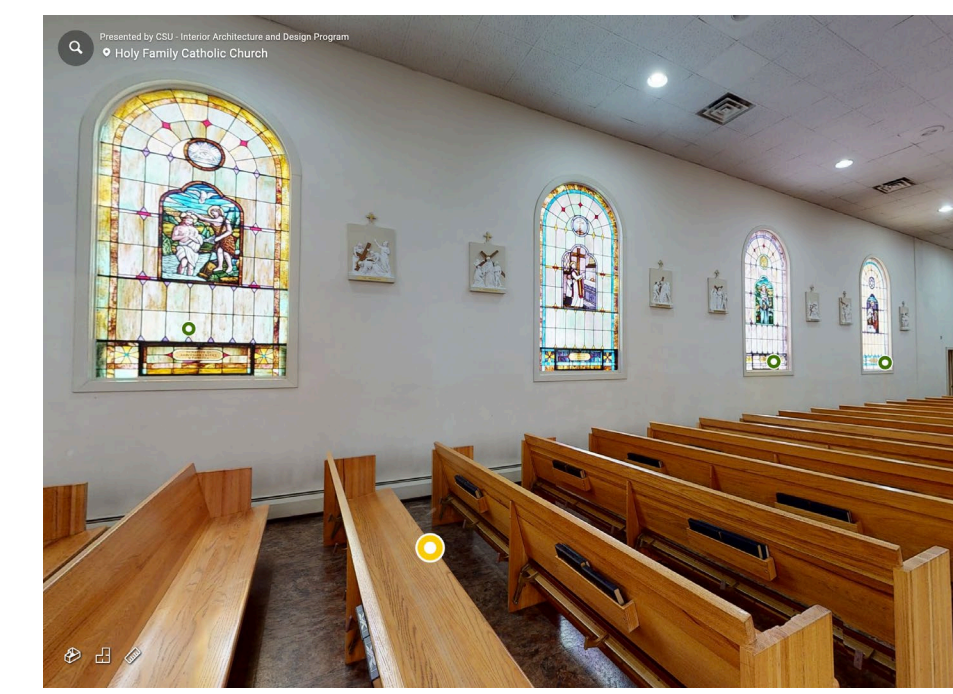
Old Post Office

German Evangelical Congregational Church



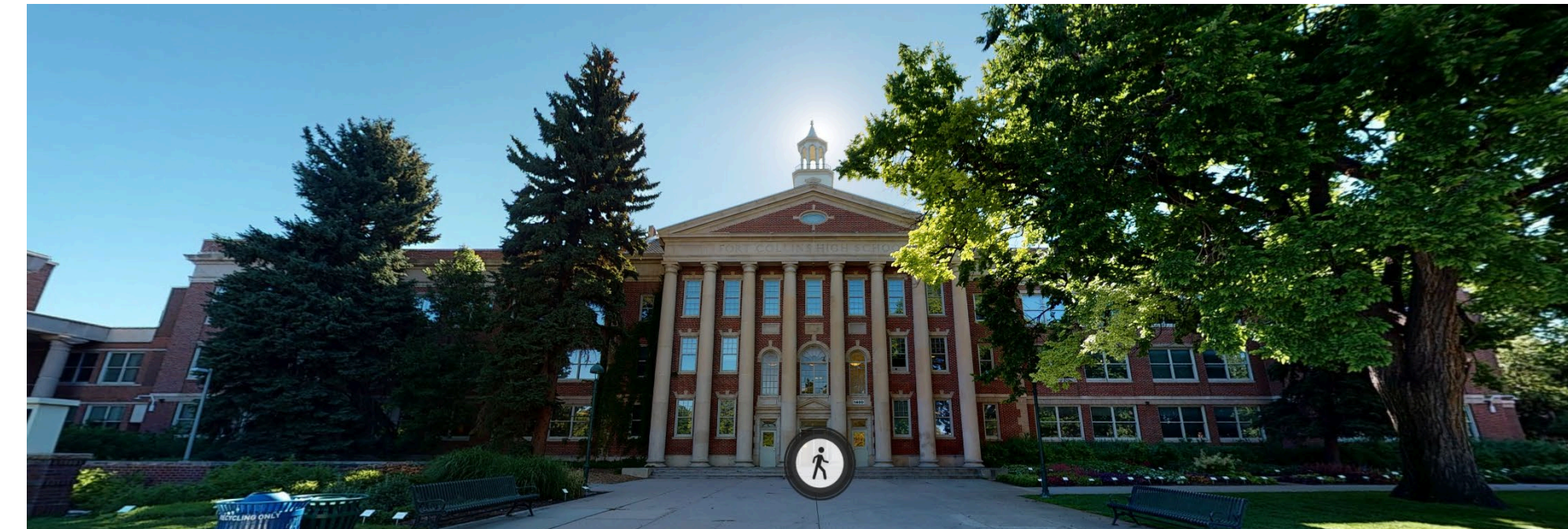
The Armstrong Hotel

Holy Family Catholic Church



Municipal Power Plant

Old Fort Collins High School



## WHAT YOU LEARNED

Through this internship, I developed my skills of engaging community stakeholders in an academic project. I sharpened my communication skills as I contacted building owners and tenants, presented the project, and described the broader benefits to CSU, Fort Collins community members, and the owners and tenants themselves. Specifically, in explaining the project, I needed to characterize architectural history in a way that was accessible and compelling. Moreover, this project afforded me the opportunity to design an educational interface that immerses community members and students in and excites them about the content. In creating this resource, I learned to synthesize complex architectural and historical movements into brief, engaging Mattertags (Matterport, 2016) with historical imagery. Lastly, this project aided me in establishing ties to my new home city. I moved to Fort Collins in 2021. This summer, I met many community members and engrossed myself in the rich history of this city. Additionally, I developed an interesting historical framework about Fort Collins.

### Scanning Process



### Community engagement



Members of our team traveled to Sterling, CO, the second region that was documented for the AVL. While they were there, they engaged K-12 students with the AVL through a VR headset, thereby, providing these students with immersive architectural, historical, and technological educational programming.

## NEXT STEPS

The next steps of this project are the continue exploring how this resource and this technology can be used for K-12 education. We will also continue to collaborate with more K-12 schools to bring age-appropriate VR programming to their classrooms. Experiments measuring the affective, behavioral, and attitudinal outcomes of engaging with this interface may aid in evaluating these applications.