

3D Modeling of Byrd Park Pumphouse

Team members: Mohammad Garada, Cesar Colato, Zemas Zeamanuel, Nicholas Casey | **Faculty adviser:** John D. Leonard II Ph.D. | **Sponsor:** Friends of Pump House | **Mentor:** Mac Wood

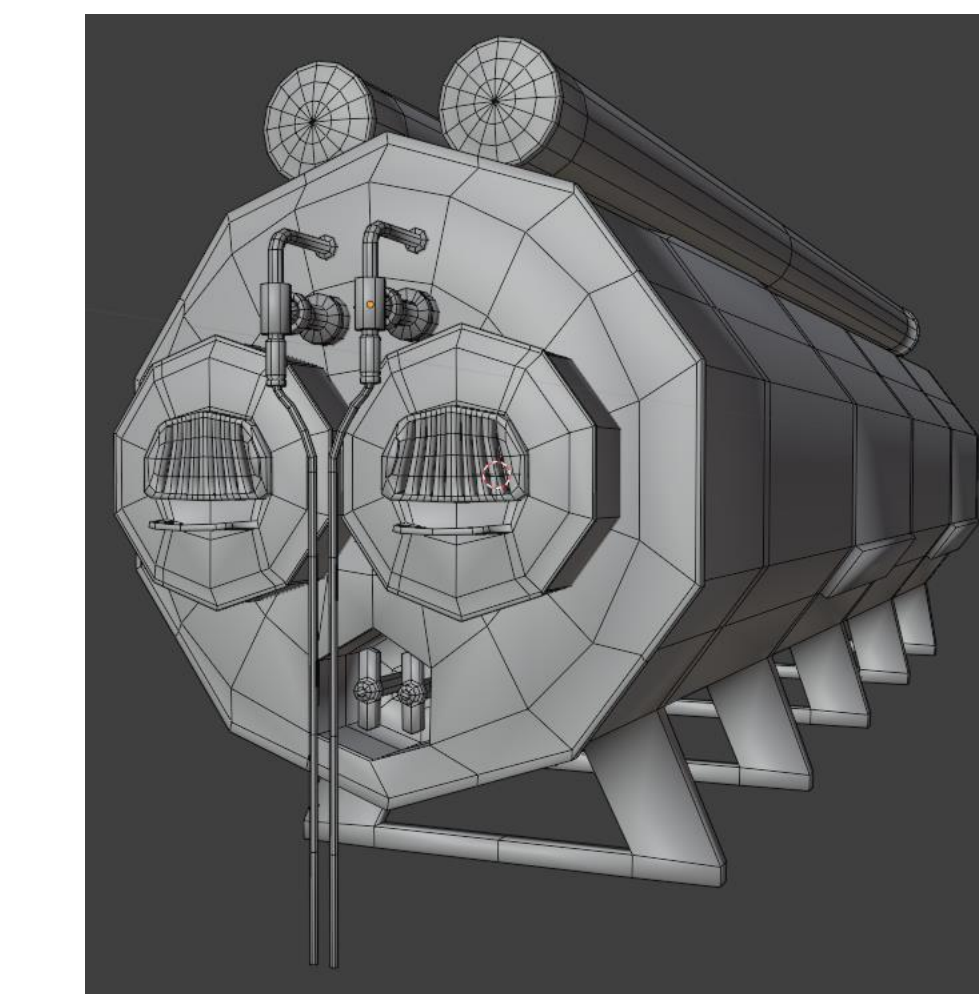
Background

The Byrd Park Pump House, built between 1881 and 1883 in Richmond, Virginia, originally served as a waterworks facility, with a lower-level water-powered pumping station and an upper-level pavilion for grand events until the mid-1920s. After its closure in 1924, the machinery was sold as scrap. Today, Friends of Pump House works to preserve and restore the site. VCU students have contributed by researching its history and creating 3D and AR models. This year's capstone project expands these efforts with an enhanced VR model, new AR features, and interactive elements like the Hydroelectric Pump Generator and Boiler Room to educate the public on the site's history.

Applying to VR



Reference boiler



VR Application

Achievements

This year's capstone team advanced digital representations of the Byrd Park Pump House by expanding upon last year's VR model, which focused on the main room. The updated project, designed for the Meta Quest 3, now encompasses the entire pumphouse, featuring newly created 3D assets such as the Hydroelectric Pump Generator and the Boiler Room. The integration of augmented reality elements and enhancements to sound and lighting in the VR environment aimed to create a more immersive, educational experience. This interactive tool is designed to engage both remote and on-site visitors, sparking interest in the restoration efforts and highlighting the historical significance of the Pump House.

Project Design - Virtual Reality

- Immersive: Explore the Pump House virtually.
- Interactive: Engage with machinery to learn its functions.
- Audiovisual: Experience authentic sounds and atmosphere.

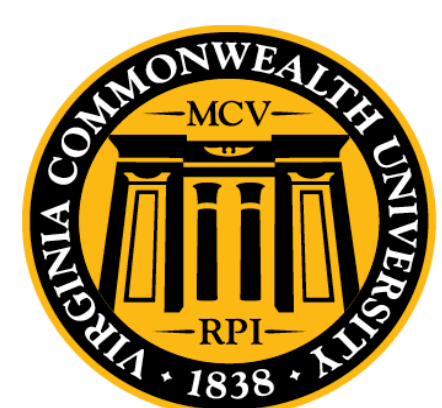
Applications:

- Education: A teaching tool for students and schools.
- Engagement: Attracts kids with advanced technology.
- Accessibility: Accessible from home, including for those with disabilities.
- Fundraising: Showcases the site to potential donors remotely.

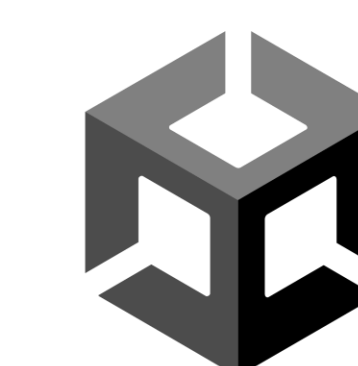
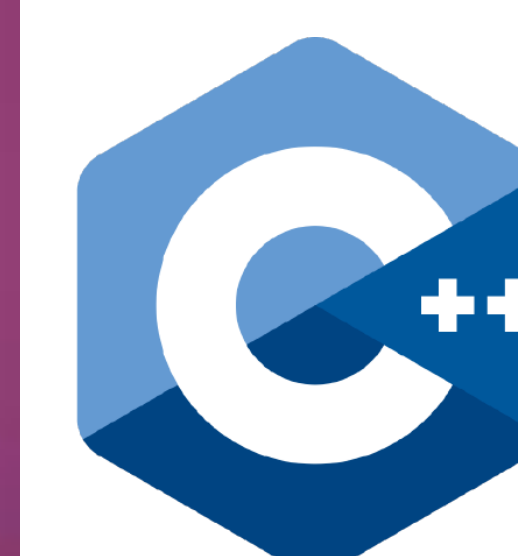
The Future

Potential improvements to the current application include:

- Collaborating with artists to refine and enhance 3D model quality.
- Adapting the project for use on iOS or Android tablets to provide a portable experience.
- Modifying the Unity project to support augmented reality on XR headsets.
- Expanding features for the Hydroelectric and Boiler Room areas.



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Unity

