

SAM WILLIAMS

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🌐 smwlllyms.github.io

Education & Organizations

- **B.S., M.S., Ph. D. in Computer Science** - Virginia Tech '22, '23, '25
- **Galileo Engineering Living and Learning Community** at Virginia Tech (2019-2020)
- **Up & Up at Virginia Tech** – 2023
 - Music event scheduling and hosting, community outreach, and equipment management
- **Phi Beta Kappa Academic Honor Society**

Work Experience

- **Teaching Assistant (2023)**
 - **Intro to Computer Organization** – Basics of Systems and the C Programming Language
 - **Intro to GUI** – Introductions to GUI, model-view controller, React and D3
- **Virginia Tech Library (2021)**
 - **XR Developer** - Designed an XR environment for visualizing 3D animal anatomy to be used in classes
- **STEM + (2020-22)**
 - **Designer** – Designed and maintained website and public XR chatrooms in Mozilla Hubs
 - **Facilitator** – Led workshops and helped run virtual events in XR chatrooms
 - **Content Developer** - Created tutorial videos, low-code programs, and 3D models

Projects

- **Online Tools, Visualizations and Environments** (available [on my website](#))
 - **Fourier Transform Calculator and Analysis Tool** for calculations and visualizations
 - **Audio Plugin Development Workstation** for quick prototyping of audio plugins
 - **x86 ASM Sandbox and Debugger** providing the capabilities to visualize and manipulate the stack and memory of an Intel IA-32 ASM program
- **Virtual Studio Technology (VST) Development** of audio plugins for digital audio workstations (DAWs)
- **YouTube channel** providing an overview of the Fourier Transform & FFT implementation
- **Virginia Tech Hackathon IX (2022) Winner**
 - Cloud-based app tracking and predicting cryptocurrency values – *Best Beginner Hack*

Research

- **Social and Educational Applications of XR**
 - Exploring how XR environments can facilitate new types of social and educational experiences
 - *Redefining the Digital Paradigm for Virtual Museums* (Culture and Computing, 2021)
 - *Immersive Technology in the Public School Classroom: When a Class Meets* (iLRN, 2021)
 - *3D Learning Environments in Practice – Virtual Museum and Virtual Classroom Case Studies* (NCUR, 2021)
- **M.C. Escher in 3D**
 - Collaboration on 3D experimental art and music based on the works of MC Escher to be experienced in virtual reality at Virginia Tech's Institute for Creativity and Technology (**ICAT**) (2020)
- **Non-verbal Vocal Interaction (NVVI)** (ongoing)
 - Exploring human vocal but non-speech approaches for computer interaction, with an emphasis on accessibility for physically impaired
 - Examining a pitch-based NVVI tool for controlling one-dimensional parameters

Skills

Languages/Environments/APIs: C, C++, JavaScript, x86 ASM, HTML/DOM, Unity3D, THREE.js, VSCode, VSTs, React

Fields/Concepts: eXtended Reality (XR), Software Development, Usability Engineering, UX design, DBMS