

# Sam Williams

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## Skills

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|-----------------------|---|
| Programming Languages | • JavaScript, C, C++, C#, Python, SQL, Java, Rust, x86 ASM, PHP   |
| Concepts              | • GUI, UX, Agile Methodologies, Model-View-Controller, Software Reverse Engineering, Computer Graphics, Data Structures, APIs, SDKs, CI/CD, Full-stack, Front-end, Back-end, Game Design, 2D/3D Modelling, Audio/Digital Signal Processing, Unit Testing, Web Scraping, Cloud Computing, Real-time Processing, Statistics, Database Management Systems, Networking, Usability Engineering, User Experience, Music |
| Technologies          | • Visual Studio, GitHub, Web Technologies (HTML/JS/CSS/DOM), Linux, .NET/Windows, React.js/Next.js, Node.js, MySQL, MongoDB, Unity3D, Three.js, WebGL, D3, REST APIs, Notebooks, DAWs, AWS Lambda, DynamoDB, S3   |

## Experience

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|--|-------------------------------------|
| Instructor of Record, Virginia Tech  | January 2024 – May 2024             |
| <ul style="list-style-type: none"><li>• Taught an introductory elective course on <b>Graphical User Interfaces</b>, including:<ul style="list-style-type: none"><li>◦ GUI Programming – concepts and technologies like MVC, event-based programming, modularity, React, MUI, etc.</li><li>◦ Computer Graphics – frameworks and libraries like coordinate systems, transformations, SVG, WebGL, D3, etc.</li><li>◦ Full-stack Development – MERN stack web application development (MongoDB, Express, React, Node, REST API).</li></ul></li><li>• Developed classwork material and delivered lectures in a fast-paced environment to a class of 70 students.</li><li>• Supervised TAs – organized weekly meetings, instructed office hours and grading procedures, utilized feedback.</li></ul> |                                     |
| Graduate Teaching Assistant, Virginia Tech   | January 2023 – December 2023        |
| <ul style="list-style-type: none"><li>• Assisted students in office hours and graded in the following courses:<ul style="list-style-type: none"><li>◦ Graphical User Interfaces (as described above)</li><li>◦ Intro to Computer Systems – The C programming language, low-level programming, memory management.</li></ul></li></ul>   |                                     |
| Web/Asset Developer, StemPlus  | Part-time, May 2020 – December 2022 |
| <ul style="list-style-type: none"><li>• Maintained company website as a front-end developer (WordPress + HTML/JS/CSS).</li><li>• Created 3D assets for virtual reality-based social and educational experiences (Blender, Mozilla Hubs).</li><li>• Produced proprietary video content, e.g., programming tutorial videos, e-learning content, production logos.</li><li>• Advised on market needs and gaps to help expand business and direct company niches.</li></ul>  |                                     |
| Software Engineer, ARIES Program, Virginia Tech Libraries  | May 2021 – August 2021              |
| <ul style="list-style-type: none"><li>• Developed an immersive web-application for desktop and Virtual Reality devices (Three.js, CI/CD w/ GitHub).</li><li>• Collaborated with UX designers to translate user interface mockup to GUI (Figma, JavaScript).</li></ul>  |                                     |

## Projects

- Open-sourced Web Applications
  - AirShare – Cross-platform/device real-time file sharing web application implemented with Next.js and WebRTC.
  - Mepository – Web-based virtual journal for recording and grouping entries based on days, weeks and months.
  - Audio Plugin Sandbox – Quickly prototype audio plugins in a web-application sandbox environment.
  - X86 ASM Sandbox/Debugger – Debug assembly programs with breakpoints and stack and memory visualizations.
  - Fourier Transform Calculator and Analysis – Real-time audio visualizations with DFT and FFT calculations website.
- VST Production – Audio plugin development, e.g., pitch and timbre shifting, filtering and compression.

## Education

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|--|------------------------------|
| M.S. Computer Science, Virginia Tech   | January 2023 – December 2023 |
| <ul style="list-style-type: none"><li>• Thesis: <i>Exploring the Usability of Non-verbal Vocal Interaction (NVVI) and a Pitch-based Implementation</i></li></ul>   |                              |
| B.S. Computer Science, Virginia Tech   | Fall 2019 – Fall 2022        |
| Research & Publications, Virginia Tech   | Spring 2020 – Spring 2024    |
| <ul style="list-style-type: none"><li>• Undergraduate and Graduate research at DVE Lab, Virginia Tech</li><li>• A Relative Pitch Based Approach to Non-verbal Vocal Interaction as a Continuous and One-Dimensional Controller (Presented at HCII 2024)</li><li>• An Approach to Pitch Based Implementation of Non-verbal Vocal Interaction (Presented at IEEE VR 2024)</li><li>• Immersive Technology in the Public School Classroom: When a Class Meets (Presented at iLRN 2021)</li></ul> |                              |