# Joshua **Yang**

Human-Computer Interaction · Visual Computing · 2D & 3D Design

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## Education

**Brown University** — *Providence, RI*

B.S. in Computer Science and Applied Mathematics — *2023 - 2025*

Advisor: Jeff Huang

**University of Massachusetts Amherst** — *Amherst, MA*

Commonwealth Honors College - Computer Science — *2022 - 2023*

## Publications

**Joshua Yang**, Mackenzie Leake, Jeff Huang, Stephen DiVerdi. (2025). VidSTR: Automatic Spatiotemporal Retargeting of Video Compositions. In Proceedings of the 2025 Conference on Human Factors in Computing Systems (CHI 2025).

Eric Chen, Tongyu Zhou, **Joshua Yang**, Jeff Huang. (2025). L.ink: Illustrating Controllable Surprise with L-System Based Strokes. In Extended Abstracts of the 2025 Conference on Human Factors in Computing Systems (CHI EA 2025).

Tongyu Zhou, **Joshua Yang**, Vivian Hsinyueh Chan, Ji Won Chung, Jeff Huang. (2024). PortalInk: 2.5D Visual Storytelling with SVG Parallax and Waypoint Transitions. In Proceedings of the 2024 ACM Symposium on User Interface Software and Technology (UIST 2024).

Tongyu Zhou, Connie Liu, **Joshua Yang**, Jeff Huang. (2023). filtered.ink: Creating Dynamic Illustrations with SVG Filters. In Proceedings of the 2023 Conference on Human Factors in Computing Systems (CHI 2023).

**Joshua Yang**. (2023). Animated Patterns: Applying Dynamic Patterns to Vector Illustration. In Extended Abstracts of the 2023 Conference on Human Factors in Computing Systems (CHI EA 2023).

## Research Experience

**Brown University - Research Assistant** — *Providence, RI*

Advisors: Tongyu Zhou, Jeff Huang — *2022 - Present*

- Designed and integrated pen stabilization, gradients, and animated patterns into the filtered.ink vector graphics editor.
- Overhauled filtered.ink to support parallelization (reducing processing time by 80%), new SVG representations, and two-and-half-dimensional (2.5D) parallax viewing.
- Conducted user study to investigate artist interactions with animated patterns.

**Adobe - Research Scientist Intern** — *San Francisco, CA*

Advisors: Stephen DiVerdi, Mackenzie Leake — *Summer 2024*

- Developed VidSTR, a proof-of-concept video editor that performs automatic video composition retargeting, mapping comps between videos.
- Used large language models (LLM) and mixed-integer linear programming (MILP) to solve spatiotemporal realignment of assets.

**Toysinbox 3D Printing - Research Engineer** — *Wellesley, MA*

Previous and Concurrent Roles: Author, Illustrator, 3D Modeler — *2021 - Present*

- Developing proprietary 3D-design-for-3D-printing (3D3P) tooling for Toysinbox 3D Printing.
- Mentored undergrad interns to research cloud slicing and fiber art tooling for Toysinbox 3D printing's education programs.
- Developed HelloMunchkins, a 3D keychain modeling app used by K-6 kids in libraries across the nation. Work presented at ALA 2020.

## Selected Projects

**SplatBrush: XR Painting with Gaussian Splats**

Typescript/WebGL/WebXR — *Fall 2024*

- Implemented an XR drawing system where users can sample brushes from real-life using a 3DGS representation and directly draw with them.
- Uses an MVSGS-based pipeline for single-pass inference of sampled scenes.
- Final project for Brown CS 2951I (graduate computer vision seminar).

### The Authorship Problem

Python/Torch/BERT *Fall 2024*

- Collected 2.3 million word custom corpus of Renaissance English dramatist text for the problem of authorship attribution.
- Fine-tuned BERT for text classification and created explainability visualizations behind authorship style from self-attention outputs.
- Final project for Brown CS 2470 (graduate deep learning).

### Realtime Path-Tracing with ReSTIR

C++/CUDA/OptiX *Spring 2024*

- Implemented NVIDIA's Spatiotemporal Reservoir Resampling (ReSTIR) paper in a GPU-based path tracer.
- Achieves 60 FPS real-time path tracing with millions of emissive triangles and NVIDIA's MDL materials.
- Final project for Brown CS2240 (graduate computer graphics).

### Color.io

Typescript/Rust *Spring 2018 - Present*

- Developed and maintained Discord bot supporting online art communities with color palette generation and various color utilities.
- Currently serving 439 Discord guilds with 42538 members (as of 09/20/24).

## Honors & Awards

2023 **1st Place Undergraduate**, CHI 2023 Student Research Competition *Hamburg, Germany*

## Skills

**Technical**: Node.js, Javascript/Typescript, React, Lit, WebGL, WebGPU, WebAssembly, SVG, HTML/CSS, Python, C/C++, Rust, OpenGL, CUDA/OptiX, MATLAB, Java, Git, Bash, LaTeX **2D/3D**: Illustrator, Inkscape, Photoshop, InDesign, Premier Pro, Blender, TinkerCAD, Shapr3D