Joshua Yang

Providence, RI 02912 | Phone: (512) 660-3886 | E-Mail: joshua_yang@brown.edu
Website: www.the3dsquare.com

EDUCATION

Brown University, *B.S. Computer Science — Applied Mathematics* Providence, RI | 2023 - 2026
Relevant Courses: Artificial Intelligence, Computer Graphics, Computational Probability

University of Massachusetts Amherst, 4.0/4.0 GPA Amherst, MA | 2022 - 2023
Relevant Courses: Data Structures, Object-Oriented Programming, Functional Programming, Statistics, Multivariate Calculus, Differential Equations, Linear Optimization

RESEARCH EXPERIENCE

Brown University Human Computer Interaction Group, *Research Engineer* Providence, RI | May 2022 - Present

- Designed and integrated pen stabilization, gradients, and animated patterns into the filtered.ink vector graphics editor.
- Conducted user study to investigate artist interactions with animated patterns.
- Overhauled web system to support parallelization (reducing processing time by 80%), new SVG representations, and two-and-half-dimensional (2.5D) parallax viewing.
- Developed web scraping tool using large language models (LLM) to validate database for improving precision and recall.

PUBLICATIONS

1. Joshua Yang. (2023). Animated Patterns: Dynamic Patterns for Vector Illustration. In Extended Abstracts of the 2023 Conference on Human Factors in Computing Systems (CHI EA '23). ACM.
   Awarded 1st place in the CHI '23 Student Research Competition
2. 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 '23). ACM.
3. Tongyu Zhou, Joshua Yang, Vivian Chan, Jeff Huang. View Transitions in Visual Storytelling via Pan & Zoom. (To be completed 2024).

RELEVANT WORKING EXPERIENCE

Toysinbox 3D Printing, *Software Developer* Wellesley, MA | Jul 2019 - Present

- Developed and implemented HelloMunchkins, a 3D modeling web application for children to create 3D designs for 3D printing. This web application has been successfully used in libraries' children 3D printing programs.
- Developed and implemented Dotter, a 3D design tool to assist fiber artists to create 3D printable models for embroidery.
- Integrated Google Firebase's authentication system and database for the company's proprietary software.

sHYp, *Summer Intern* Jun 2022 - Aug 2022

- Evaluated fluid flow and bubble formation in hydrogen electrolyzers using ANSYS Meshing/Fluent fluid simulations.
- Optimized product geometry in SOLIDWORKS to reduce dangerous H2/O2 gas-crossover by 90%.

TEACHING EXPERIENCE

UMass College of Computer and Information Sciences, *Teaching Assistant* Amherst, MA | Spring 2023

- Assisted in UMass' Data Structures course with answering student questions, leading lab sections, and grading exams.

UMass Hackathon, *Workshop Instructor* Amherst MA | Fall 2023

- Taught an introduction to ray tracing workshop, participants successfully coded their own ray tracers in the browser.

RELEVANT PERSONAL PROJECTS

- Color.io - developed Discord bot providing color utility tools, **serving 212 guilds with 10916 members** (as of 09/17/23)
- Inkscape-cli - developed library for Inkscape software bindings in Node.js, **downloaded 1,105 times**
- Texture painter - developed brush engine that creates global-illumination-aware textures for 3D models in painterly style
- Clouds - developed single-scattering volumetric cloud raytracer in WebGPU and WGSL
- Affective plants - developed script to grow 3D plant geometries for populating XR scenes

- Conformal maps - developed WebGPU viewer for conformal maps of complex functions with real-time interactivity
- Music time - developed lo-fi generative music synthesizer that runs in the browser
- Fractal - developed fractal rendering pipeline with multithreading for VFX
- Geometry kernel - developed bezier-patch-based geometric modeling kernel
- Cuttlefish - developed custom functional programming language based on J/APL

LEADERSHIP EXPERIENCE

UMass 3D Printing Club, *President (2022-2023) & Advisor (2023 – Present)* Amherst, MA | Aug 2022 - Present

- Founded UMass Amherst's first 3D printing club and secured approval as an official student organization
- Oversaw change of leadership across summer 2023 and guided new officers in running the club for Fall 2023

SKILLS

Skills: Javascript / Typescript, Node.js, React.js, Three.js, HTML, CSS, Java, Python, C++, OpenGL, GLSL, WebGL, WebGPU, WGSL

Software: Adobe Photoshop, Adobe Illustrator, Inkscape, Blender, Tinkercad, Rhino, SOLIDWORKS, Houdini, Fluent

INTERESTS

Illustration, origami, webcomics, fiber art, swing dancing, piano, long walks,