




Žiga Kovačič

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EDUCATION

Cornell University

Ithaca, NY

B.A. in Computer Science and Mathematics | **GPA: 4.16/4.0**

Aug 2022 - May 2025

- ▷ **Relevant courses:** Graphics (A+), (Grad) Computation for Content Creation (A), Machine Learning (A+), Algorithms (A+), Intro to Probability (A+), Linear algebra (A+), Honors Discrete structures (A+), Numerical Analysis (A), Reinforcement learning (A), Honors Real Analysis 2 (A+), Digital Logic and Computer Organizations (A+), Embedded Systems (A), Networks (A+), Honors Object Oriented Programming and Data Structures (A)
- ▷ **In progress:** (Grad) Mathematics of Deep Learning, (Grad) Statistical Inference, (Grad) Mathematical Programming I

RESEARCH EXPERIENCE

Cornell Graphics & Vision Lab | Advisor: Abe Davis

Ithaca, NY

Undergraduate Researcher

Jan 2023 - Present

- ▷ Worked on Time Lapse Video Generation with Independent Control over Deep Latent Features.
- ▷ Submitted to SIGGRAPH 2024
- ▷ BURE REU: Awarded 6000\$ to fund research in summer of 2023

Cornell University Artificial Intelligence | with Meta AI

Ithaca, NY

Vice President & Undergraduate Researcher

August 2023 - Present

- ▷ Do research in machine learning, computer graphics, and vision in collaboration with professors at Cornell and other ML researchers.
- ▷ Lead and participate in weekly research paper reading groups.

TEACHING EXPERIENCE

Cornell University, Teaching Assistant

▷ **CS 4620:** Introduction to Computer Graphics

Fall 2024

▷ **CS 4780:** Introduction to Machine Learning. **Award:** Course Staff Exceptional Service Award

Spring 2024

▷ **CS 2110:** Object Oriented Programming and Data Structures,

Spring 2023

PROJECTS

Caustics and Water surface simulation — Graphics final project Top Submission

December 2023

- ▷ Implemented Multi-pass rendering, screen space refractions, shadow mapping, height fields, environmental mapping, and time-varying environmental map.

Ray Tracing — Graphics creative project Top Submission

December 2023

- ▷ Implemented constructive solid geometry rendering, distributed ray tracing, reflections and refractions, anti-aliasing, fractal rendering, BVH speedup structure, etc.

MelodyMesh — Grad course final project

April 2023 - May 2023

- ▷ Built a 3D music visualizer that deforms a mesh based on dominant frequencies in a sound recording.
- ▷ Used a graphics library Three.js to render deformations of 3D objects loaded from .obj mesh files in real-time on a website.
- ▷ Used signal processing theory and FFT algorithm to obtain the dominant frequency bins of a sound in real-time and map them to deformations of the mesh using spherical harmonics and Legendre polynomials.

Simulating Evolving Artificial Life

Oct 2022 - Dec 2022

- ▷ Build a simulator game of a world where animals wander around, eat, reproduce, and evolve.
- ▷ Build a parser converting a program into an AST, language interpreter using the visitor pattern, and GUI using JavaFX.

WORK EXPERIENCE

National Research Institute, Parallel Computing Lab

Slovenia

Software Engineering Intern

June 2022 - Aug 2022

- ▷ Explored and evaluated methods for binding code from sizable C++ projects (maxCliqueSearch) to Python to make it more accessible to 10+ research teams to reuse in further research.
- ▷ Wrote detailed documentation on GitLab for using the C++ library and improved the program's CLI functions.

National Research Institute, AI Lab

Slovenia

Software Engineering Intern

June 2021 - Dec 2021

- ▷ Collaborated in smart assistant development for oil refineries.
- ▷ Formatted and processed text data for further semantic classification using Transformers and NumPy frameworks.
- ▷ Explored methods used to optimize semantic classification for speech recognition.

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, C/C++, \LaTeX , Markdown

Developer Tools: NeoVim, Git, Figma, Jupyter Notebooks, VS Code

Libraries: PyTorch, Numpy, PyTorch, Three.js, JavaFX