Ruslana Fogler

Contact Information

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Education

Carnegie Mellon University, Pittsburgh, PA
M.S. Electrical and Computer Engineering, May 2026
Funded by Apple NSI Scholarship
Advisor: Prof. Ioannis Gkioulekas

Carnegie Mellon University, Pittsburgh, PA
B.S. Electrical and Computer Engineering, May 2025

Awards

Apple New Silicon Initiative (NSI) Scholarship
David Tuma Best Undergraduate Project Award

Employment

GPU Shader Core Design Verification Intern May 2025-Aug 2025
Apple

FPGA Platform Engineering Intern May 2024-Aug 2024
Apple

Software Engineering Intern May 2023-Aug 2023
Lockheed Martin

Teaching

15-468: Physics-Based Rendering
Teaching Assistant, Carnegie Mellon University Spring 2026

18-491: Digital Signal Processing
Teaching Assistant, Carnegie Mellon University Spring 2024

Intro to Electrical and Computer Engineering
Teaching Assistant, Carnegie Mellon University Spring 2022, Fall 2022, Spring 2023

Academic Projects

Mushroom toxicity classification Mar 2026-May 2026
18-786: deep learning final project

- Coded a CNN, ResNet, and vision transformer (ViT) in Pytorch
- Built to classify mushroom toxicity based on image data of mushrooms from the Northern Thailand region
- Incorporated explainability analysis with Grad-CAM and attention rollout

RetroCore: FPGA cycle-accurate Gameboy emulator Jan 2025-May 2025
ECE undergraduate capstone

- Won 1st place capstone and David Tuma Award
- In a team of 3, created subsystems and memory hierarchy in SystemVerilog (a modified Intel Z80 CPU, Pixel Processing Unit (PPU), Audio Processing Unit (APU))
- Tested and verified on the Altera DE2-115 FPGA

Path tracer with photon mapping Jan 2025-May 2025

15-458: Physics-Based Rendering final project

- Implemented a path tracer based on Dartmouth Introductory Ray Tracer (DIRT) in C++
- Supports basic BSDF models, including microfacet models.
- Supports volume rendering with delta and ratio-tracking
- Added volumetric photon mapping capabilities via writing a kd-tree and multi-pass rendering approach

3D Structured Light with binary/XOR/gray codes Nov 2024-Dec 2024

15-463: Computational Photography final project

- Created custom python script to generate corresponding codes
- Wrote custom data capture, calibration, stereo triangulation, and data visualization code with python
- Set up various test scenes and pipeline infrastructure to collect results

RISClownin: custom RISC-V CPU Jan 2024-May 2024

18-447: Intro to Computer Architecture semester-long project

- Created by a team of 3 in SystemVerilog
- Supports 32 bit integer RISC-V instructions, including all arithmetic, control flow, load/store instructions in immediate/register formats
- Verified with gcc-generated assembly

GPU streamed audio convolution Apr 2024-May 2024

15-418: Intro to Parallel Programming and Computer Architecture final project

- Wrote the Overlap Add algorithm in Cuda and used CuFFT library to convolve short reverbs against long-form audio recordings
- Added streaming capabilities to pipeline the computation and reduce the CPU to GPU memory transfer bottleneck penalties

USB engine emulator Nov 2023

18-341: Logic Design and Verification project

- Created various packets and protocol routines following the USB 2.0 standard in SystemVerilog