

# JONAS REGEHR

Salt Lake City, UT | (385) 209-3795

[regehrjs@gmail.com](mailto:regehrjs@gmail.com) | [linkedin.com/in/jonasregehr/](https://linkedin.com/in/jonasregehr/) | [jonasregehr.github.io](https://jonasregehr.github.io)

## EDUCATION

### University of Utah, Kalhert School of Computing

Salt Lake City, UT

Honors Bachelor of Science Candidate: Computer Science

Expected Graduation: December 2026

- Cumulative GPA: 3.975, Flagship Scholarship, Dean's list
- Relevant coursework: Algorithms, Data Structures, Computer Organization, Software Practice, Discrete Structures, Scientific Computing, Linear Algebra

### Université Grenoble Alpes, French Study Abroad

Grenoble, France

- Faculty-led study abroad program through the University of Utah

Summer 2024

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## RESEARCH EXPERIENCE

### University of Utah, Compilers and Programming Languages Lab

Salt Lake City, UT

Undergraduate Research Assistant, Engineering Scholar

January 2024 - Present

- Contributing to Herbie, a compiler that automatically improves the error of floating point expressions
- Developed Herbie backends for AVX intrinsics, numpy, and the vdt math library
- 2.0x speedup in output expressions targeting numpy; 1.5x vdt; support for RCP/RSQRT AVX instructions
- Worked with FFI, C, Racket; low-level performance measurement; vector operations, and control flow
- Currently working on synthesizing and evaluating custom floating point hardware instructions
- Advisor: Professor Pavel Panchekha

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## PUBLICATIONS

Target-Aware Implementation of Real Expressions

ASPLOS 2025

- Saiki, Brough, Regehr, Ponce, Pradeep, Akhileshwaran, Tatlock, Panchekha

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## SKILLS

**Programming Languages:** Python, C#, Java, C, C++, Racket, MIPS assembly, Matlab, Latex

**Tools/Systems:** VSCode, Github, Git, Docker, WSL 2, Visual Studio, Command-line interfaces, Microsoft suite, Networking fundamentals, .NET MAUI, Java Swing, Qt

**Language Proficiencies:** English

**Certifications:** Information Technology Specialist Certification - Java

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## PROJECTS

### Multiplayer Agar.io Clone - C# and .NET MAUI

- Engineered a custom networking protocol and API for seamless client-server communication
- Facilitated cross-platform gameplay across Windows, Mac, Android, and iOS

### Custom Ray Tracer - Java

- Implemented core ray-tracing techniques such as ray casting, anti-aliasing, and defocus blur
- Rendered 3D scenes with realistic lighting, shadows, and reflections

### Task Manager System - Java and Java Swing

- Designed and implemented an intuitive user interface for scheduling and managing everyday tasks