Caleb A. Helbling

EDUCATION

Master of Science, Computer Science
Purdue University, West Lafayette, IN
Expected Graduation: Spring 2023

Bachelor of Science, Computer Science, Minor in Mathematics
Tufts University, Medford, MA
GPA: 3.63, Graduated Spring 2016
Tau Beta Pi engineering honor society member

SKILLS

Expertise: Programming Languages, Computer Networking, Computer Graphics, Embedded Systems Programming, Machine Learning, Concurrent Systems, Simulation and Game Development, and Mathematics.
Languages: C++, C#, C, Python, Java, JavaScript, F#, Erlang, Haskell, Coq, Clojure, HCS12 Microcontroller Assembly, SML, PHP, HTML, CSS

EXPERIENCE

Software Engineer III   November 2019 - July 2021, May 2022 - August 2022
Holos, Inc, Madison, WI
- Worked as a software developer on Holos' virtual reality platform experience. Implemented the multiplayer functionality of Holos, which includes user state synchronization, file sharing, voice chat and encryption. Prototyped several other interaction based features for the Holos system.
- Holos makes VR software for K-12 education and other educational projects such as training software for F-35 fighter jet mechanics.

Assistant Staff   August 2016 - February 2019
MIT Lincoln Laboratory, Lexington, MA
- Worked as a software developer researcher at MIT Lincoln Laboratory. MIT Lincoln Laboratory is US Department of Defense research and development center which applies advanced technology to problems of national security.
- Primarily focused on domain specific languages for embedded systems development, networking of embedded systems, and graph theory research.

Intern Developer   Summer 2014
AIR Worldwide, Boston, MA
- Worked as an intern on a research and development team at AIR Worldwide. Researched and implemented solutions for computational geometry problems on elliptic geometry, for use in geospatial analysis.
- AIR Worldwide creates risk modeling software which simulate natural and man-made catastrophes for use by insurance and government organizations.

Intern Developer   Summer 2013
IBM, Rochester, MN
- Worked as a software development intern on the z/OS print development team. I developed an analysis program to detect the location and magnitude of differences in print documents outputted by the z/OS Infoprint server transforms for testing purposes.
- The program that I wrote is now in use for transform testing at Crawford Technologies and Ricoh. IBM works closely with Crawford and Ricoh to develop the z/OS Infoprint server.

Independent Game Developer   Summer 2011 - Fall 2012
Jagex Game Studios, Cambridge, United Kingdom
- Developed the Ace of Spades computer game in collaboration with other international developers prior to acquisition by Jagex Ltd. Jagex is the largest game development studio in Europe. Prior to acquisition, Ace of Spades was downloaded 2.5 million times and had a peak concurrent player count of 3500.

Intern Developer   Fall 2012 - Spring 2013
Bolder Thinking, Fargo, ND
- Developed system visualization software for Bolder Thinking as an intern at the North Dakota State University Research and Technology Incubator.
- Bolder Thinking develops cloud based VOIP (Voice Over Internet Protocol) software for enterprise customers.

ACADEMIA   **Conference Publications**

Helbling, Caleb, and Fırat Aksoy. "Solving the Funarg Problem with Static Types." *33rd Symposium on Implementation and Application of Functional Languages.* ACM, 2021.

Helbling, Caleb. "Directed Graph Hashing." *51st Southeastern International Conference on Combinatorics, Graph Theory & Computing.* 2020.

Helbling, Caleb, and Samuel Z. Guyer. "Juniper: a functional reactive programming language for the Arduino." *Proceedings of the 4th International Workshop on Functional Art, Music, Modelling, and Design.* ACM, 2016.

Purdue University   Spring 2022, Fall 2022
Teaching Assistant, West Lafayette, IN
- Teaching assistant for CS252: Systems Programming, an undergraduate course in low level systems programming.
- Teaching assistant for CS352: Compilers, an undergraduate course in compilers.

Tufts University   Fall 2014 - Spring 2016
Teaching Assistant, Medford, MA
- Assisted for COMP 50 Concurrent Programming course for two years. Duties included creating student exercises, holding office hours, grading assignments and answering student questions via online forum.
- COMP 50 was a small, special topic course with only one undergraduate teaching assistant.
- Assisted for COMP 105 Programming Languages course. COMP 105 provides an introduction to the study of programming languages as an intellectual discipline.

MISC   *Bug Bounty Program*   August 2021
Microsoft, Microsoft Windows Vulnerability CVE-2021-40464
- Reported vulnerability (assigned CVE-2021-40464) in Microsoft Windows Nearby Sharing that allows malicious code execution.
- Awarded bug bounty for this report by Microsoft.

PERSONAL   **Blog**: Where I write thoughts on technical topics and more `https://helbli.ng/blog/`

Global Game Jam Projects:
- Cell Tower Tycoon (2018):
  `https://globalgamejam.org/2018/games/cell-tower-tycoon`
- Wave Rider (2017): `https://globalgamejam.org/2017/games/wave-rider-3`

Hobbyist Game Dev Projects: Blockspell, a multiplayer magical voxel combat game. `https://www.blockspell.com/`

GitHub: `https://github.com/calebh/`