Emma Hawk

EDUCATION M.S. in Computer Science (AI) **Expected Completion 2023** University of Southern California, Los Angeles **B.S.E in Electrical Engineering with Honors** GPA: 3.5/4.0, 2013-2017 University of Iowa, Iowa City, Iowa Honors in Engineering, Thesis in Acoustic Communications Academic Year 2015-2016 Visiting Student at Aalto University, School of Science Aalto University in Espoo, Finland **Upload VR Bootcamp** June 2017 - Sept. 2017 Full-time 10-week intensive development training program using Unity C# for VR applications EMPLOYMENT Software Engineer at Visby Camera Corp. Dec. 2017 - Dec. 2021 Development of real-time decode and rendering capabilities of light fields Technical lead for client-facing projects including remote rendering for mobile VR headsets and Unity plugin _ development March 2015 - June 2017 **Electrical Engineering Department Research Assistant** Mentor: Professor Ananya Sen Gupta, University of Iowa Optimized sparse signal processing in underwater acoustics for channel estimation, presented at MTS/IEEE OCEANS'17 conference

- Graphed and analyzed differential energy flux of ion processes using SWIA data from NASA MAVEN mission

Camp Leader at University of Iowa Robot Theater Summer Camp

- Mentored girls age 9-11 to introduce them to the intersection of creative writing and programming

SKILLS

C++/CUDA

- Designed and developed highly optimized decoder and rendering pipeline for light field data
- Formally trained during NVIDIA-led CUDA course at Aalto University

Python

- Designed and developed content server for light field payloads
- Usage of tools including but not limited to Jupyter notebooks and Tkinter

Unity C#

- Focus on using VR SDKs to interact with HMDs with experience developing native plugins
- Shader development for decoding hidden alpha in encoded videos for AR playback on Android

Google Compute Platform

- Resource management for remote rendering instances

Summer 2015

LEADERSHIP AND COMMUNITY INVOLVEMENT

Member of Renaissance Collective

- Participation in highly curated professional development community of "smart generalists"

Student Government at University of Iowa

- Member of the Teaching Committee and Financial Aid Advisory Committee

Member of University of Iowa Robotics Club

- Participated on control team to program robot for participation in NASA's Lunabotics Competition in May 2015
- Mentored and led control group for second year of NASA's Lunabotics Competition in May 2017

AWARDS AND RECOGNITION

- 1st place in Intel Challenge at DeveloperWeek 2018 Hackathon
- 1st place in Gaming/Entertainment category at WebXR Week 2018 Hackathon
- 1st place in Software at HackISU Spring 2017 for DropView
- Acoustic Communications research presented and published at IEEE OCEANS'17 conference in Scotland
- Professional Development Award for Outstanding Research Assistant in 2017
- Iowa Space Grant Consortium Scholarship Recipient for NASA MAVEN project
- Fellow at Iowa Center for Research by Undergraduates

PUBLICATIONS

- A. S. Gupta and E. Hawk, "Delay spread estimation in shallow water acoustic channels using masked channel subspaces," *OCEANS 2017 Aberdeen*, Aberdeen, 2017, pp. 1-5, doi: 10.1109/OCEANSE.2017.8084985.
- Q. Jin, A. S. Gupta, M. Kapo, E. Hawk and J. S. Halekas, "Autonomous Detection and Disambiguation of Martian Ion Trails Using Geometric Signal Processing Techniques," *ICASSP 2019 - 2019 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Brighton, United Kingdom, 2019, pp. 2312-2316, doi: 10.1109/ICASSP.2019.8683101.
- R. A. McCarthy, A. Sen Gupta and E. Hawk, "Support-Constrained Mixed-Norm Optimization Techniques for Estimating Multipath Activity in Shallow Water Acoustic Channels," in *IEEE Journal of Oceanic Engineering*, vol. 45, no. 3, pp. 683-698, July 2020, doi: 10.1109/JOE.2020.2980154.

Sept. 2016 - May 2017

Nov. 2020 - Present

Aug. 2014 - May 2017