

Colin Summers

Education

- 2018 **B.S. Computer Science, Lavin Entrepreneurship Program**
Paul G. Allen School, University of Washington, Seattle, Washington, USA
Grade: 3.85 / 4.0 with *Departmental Honors, Cum Laude*
- Expected 2019 **M.S. Computer Science**
Paul G. Allen School, University of Washington, Seattle, Washington, USA

Experience

Professional

- 08/2018 – Present **Research Associate, Personal Robotics Lab, University of Washington**
Seattle, WA, USA.
Supervisor: Siddhartha Srinivasa, PhD
- Design and implement algorithms for robust and rich perception in highly dynamic systems
 - Develop novel algorithms for high-performance, multi-agent motion planning
- 09/2017 – Present **Research Associate, Robotics and State Estimation Lab, University of Washington**
Seattle, WA, USA.
Supervisor: Dieter Fox, PhD
- Designed and built autonomous excavator as a platform for learning robotic manipulation of granular media
 - Implemented a full robotics stack, including localization, kinematics, computer perception, controls, planning, and deep reinforcement learning
- 09/2017 – 12/2017 **Intern, Blue Origin**
Kent, WA, USA.
Supervisor: Brandon Haber
- Supported testing operations at the West Texas Launch Site and identified deficits in training procedures
 - Developed engine and vehicle operator training tool utilizing hardware-in-the-loop simulation capabilities and incorporated tool into standard training procedures
 - Presented training tool architecture and its impact on training quality at company-wide meeting
- 06/2017 – 08/2017 **Intern, NASA Jet Propulsion Laboratory**
Pasadena, CA, USA.
Supervisor: Brandon Rothrock, PhD
- Developed a comprehensive, physics-based simulation environment for comparing reinforcement learning algorithms against 240 human subjects on complex tasks
 - Implemented a forward and inverse kinematics model for a multiple degree of freedom robotic arm
 - Presented summary of research findings to department leads and published results in Cognitive Science 2018 Conference [1]
- 03/2017 – 06/2017 **Teaching Assistant, Paul G. Allen School, University of Washington**
Seattle, WA, USA.
Supervisor: Hal Perkins
- Designed and led weekly review section for CSE 333, Systems Programming
 - Hosted weekly office hours and provided support for over 120 students

– Seattle, Washington – USA

- 06/2016 – 08/2016 **Intern, NASA Glenn Research Center**
Cleveland, OH, USA.
Supervisor: Jeffrey Chin
- Developed an open-source, analytical, system-level model of the aerodynamic, electrical, and structural components in the Hyperloop system
 - Identified, further assessed, and demonstrated the feasibility of various designs necessary for the viability of the Hyperloop vehicle concept and presented findings to AIAA SciTech conference and journal [2]
- 06/2014 – 01/2016 **Research Associate, Department of Chemistry, University of Washington**
Seattle, WA, USA.
Supervisor: David Ginger, PhD
- Synthesized organic polymer photovoltaic devices and tested device performance using JV, External Quantum Efficiency, and Fourier Transform Infrared Spectroscopy measurements
 - Developed data analysis and processing tools for the lab
- 05/2013 – 09/2013 **Ski Patroller, Ski Portillo**
Los Andes, Chile.
Supervisor: Frank Coffey
- Performed avalanche control, emergency medical services, and ski area management

Projects

- 01/2017 – 03/2018 **Autonomous Racecar, Independent**
Seattle, WA, USA.
- Designed and built an autonomous 1/10th scale racecar from commercial off the shelf parts as part of an honors research project
- 08/2015 – 01/2017 **Power Distribution & Thermal Management Lead, UWashingon Hyperloop**
Seattle, WA, USA.
- Designed, built, and raced a scale version of the Hyperloop transportation concept in a SpaceX hosted engineering competition, placing 6th out of over 1200 international teams

Miscellaneous

- 06/2018 – Present **Beyond Silicon Valley Speaker Series, Paul G. Allen School, University of Washington**
Seattle, WA, USA.
- Independently developed and organized an ongoing speaker series featuring industry leaders in AI, aerospace, healthcare, and more to highlight the diverse set of opportunities available to students pursuing a computer science education
- 07/2017 **Summer School on Cognitive Robotics, Massachusetts Institute of Technology**
Boston, MA, USA.
- Attended a week long workshop on robust execution under uncertainty and risk, motion and activity planning, perception, and manipulation
 - Collaborated with fellow students on a multi-agent robotics "Grand Challenge"

Featured Coursework

Robotics	Machine Learning, Artificial Intelligence, Robotics, Deep Reinforcement Learning
Physical Sciences	Honors Chemistry, Honors Organic Chemistry, Honors Physics, Chemical Transport, Computer Aided 3D Design
Mathematics	Calculus, Linear Algebra, Linear Analysis, Differential Equations
Computer Science	HW/SW Interface, Operating Systems, Data Abstractions, Probability, Logic, Systems Programming, Embedded Systems, Scientific Computing, Signal Conditioning, Computational Methods for Data Analysis

Skills

Advanced	C/C++, Python, PyTorch, Linux, Robotics, ROS, Spanish, System Design
Proficient	Reinforcement Learning, SolidWorks, Circuit Design, Operating Systems, Controls, Artificial Intelligence, Deep Learning

– Seattle, Washington – USA

Honors & Awards

- 2018 Outstanding Senior Award, Paul G. Allen School
- 2018 NSF REU Grant Recipient
- 2018-Present Phi Beta Kappa
- 2017-Present Tau Beta Pi
- 2016-Present NASA Academy Alumni Association
- 2016, 2017 Burkhardt Family Endowed Scholarship (served as keynote speaker for 2017 year)
- 2015, 2016 Hal C. Rathvon Memorial Scholarship
- 2015 James A. Hewitt, Jr. Endowed Scholarship

Publications

- [1] M. Edmonds, F. Kubricht, James, C. Summers, Y. Zhu, B. Rothrock, S.-C. Zhu, and H. Lu, "Human causal transfer: Challenges for deep reinforcement learning," in *40th Annual Meeting of the Cognitive Science Society*, 2018.
- [2] K. Decker, J. Chin, A. Peng, C. Summers, G. Nguyen, A. Oberlander, G. Sakib, N. Sharifrazi, C. Heath, J. S. Gray *et al.*, "Conceptual sizing and feasibility study for a magnetic plane concept," in *55th AIAA Aerospace Sciences Meeting*, 2017, p. 0221.