Stephen Phillips

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Education

University of Pennsylvania
Ph.D. in Computer Science (Advisor: Kostas Daniilidis) — *August 2014 - May 2021*

University of Pennsylvania
M.Sc. in Computer Science — *August 2014 - June 2016*

University of California, Los Angeles
B.S. in Computer Science (GPA 3.97) — *August 2010 - June 2014*

Research Experience

Roboticist, Applied Scientist — May 2023 - Present
Robotics and AI Institute in Cambridge, MA

- Designed a hardware test workflow for team's trained reinforcement-learning based policies for safe deployment on physical robots outside of simulation.
- Developed a sonar-camera fusion pipeline for indoor navigation on our legged robot platform, reducing collisions in low-texture and cluttered environments.
- Built semantic mapping pipelines combining self-supervised visual features (e.g., DINO) with LiDAR odometry to enable semantic-based terrain traversability assessment downstream.

Visiting Assistant Professor — September 2021 - May 2023
Swarthmore College

- Mentored two students on senior thesis projects. See Teaching section for classes taught.
- Mentored five undergraduate students in extracurricular multi-sensor fusion and machine learning projects, all five continued to graduate programs in CS/engineering.

Software Engineering Experience

Waymo Perception Research Intern — May 2021 - July 2021
Waymo (Remote)

- Conducted research on multi-sensor fusion of camera and radar models for autonomous driving in adverse weather conditions.
- Implemented camera-radar sensor data fusion components for the model training pipeline.

Google Software Engineering Intern — June 2017 - September 2017
Google in Mountain View, CA

- Worked on Project Tango (later Daydream), researching machine learning techniques to improve inertial measurement unit (IMU) accuracy on smartphones.
- Implemented IMU data processing pipeline to analyze sensor performance across diverse real-world scenarios.

Publications

Xiaoyi Cai, Siddharth Ancha, Lakshay Sharma, Philip R Osteen, Bernadette Bucher, **Stephen Phillips**, Jiuguang Wang, Michael Everett, Nicholas Roy, and Jonathan P How. 2024. Evora: Deep evidential traversability learning for risk-aware off-road autonomy. IEEE Transactions on Robotics (2024).

Stephen Phillips and Kostas Daniilidis. 2019. All graphs lead to Rome: Learning geometric and cycle-consistent representations with graph convolutional networks. CVPR 2019 Image Matching: Local Features and Beyond Workshop (2019).

Andrew Jaegle, **Stephen Phillips**, Daphne Ippolito, and Kostas Daniilidis. 2018. Unsupervised learning of image motion by recomposing sequences. International Conference on Learning Representations (ICLR) (2018).

Andrew Jaegle, **Stephen Phillips**, and Kostas Daniilidis. 2016. Fast, robust, continuous monocular egomotion computation. In Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) 2016, 773–780.

Early Experience

Undergraduate Researcher August 2013 - July 2014
UCLA Vision Lab under Professor Soatto

Android Developer Lead October 2012 - October 2013
UCLA Ozcan Lab

Software Engineering Intern June 2013 - August 2013
Google in Venice Beach, CA

Software Engineering Intern June 2012 - August 2012
Zynx Health

Teaching Experience

Engineering 27/Computer Science 72 Computer Vision January 2022 - May 2023, 2 times
Instructor *Swarthmore College*

Engineering 71 - Digital Signal Processing January 2022 - May 2022
Instructor *Swarthmore College*

Engineering 15 - Fundamentals of Digital and Embedded Systems August 2021 - December 2022
Co-instructed with lab instructor Professor Erik Cheever *Swarthmore College*

Engineering 19 - Numerical Methods and Applications in Engineering August 2021 - December 2021
Instructor *Swarthmore College*

CIS 107/VLST 209 - Visual Culture through the Computer's Eye January 2021 - June 2021
Co-instructor and co-designer with Dr. Will Schmenner. *University of Pennsylvania*

MCIT 515 - Linear Algebra for Machine Learning July 2020 - December 2020
Head teaching assistant under Professor Jean Gallier *University of Pennsylvania*

MEAM620 - Advanced Robotics January 2016 - May 2019
Lecturer and teaching assistant, under various instructors *University of Pennsylvania*

CIS390 - Robotics: Planning and Perception September 2015 - December 2015
Teaching assistant under Professor Kostas Daniilidis *University of Pennsylvania*

Coursera - Robotics: Perception January 2016 - July 2016
Teaching assistant and homework designer *University of Pennsylvania (Online)*

Awards and Honors

National Science Foundation Graduate Research Grant Honorable Mention March 2016

Outstanding Reviewer of 3DV 2020 November 2020

Outstanding Bachelor of Science Degree Award (Computer Science) July 2014

Outreach Volunteering

Co-director of Penn Open Labs October 2016 - January 2020
University of Pennsylvania

Robot Design Judge, FIRST Lego League Regional Championship February 2014 - February 2019
University of Pennsylvania

Mentor for NSF Research Experience for Teachers (RET) July 2016 - August 2016
University of Pennsylvania

Charity Projects

Project: The First Science of Savings Challenge September 2020
SaverLife

Project: 24 Hours of Good November 2013
Google in Venice Beach, CA

Project: San Diego Zoo App March 2011- June 2011
University of California, Los Angeles