Kevin Black

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github.com/kvablack

Education

Pursuing B. S. in Computer Science and Mathematics – University of Texas at Austin 2018 – 2022

- Turing Scholars, Dean's Scholars honors programs
- Selected Coursework: Data structures, algorithms, computer architecture, operating systems, linear algebra, differential equations, number theory, real analysis, probability/statistics, computer vision, artificial intelligence
- Cumulative GPA: 4.0

Skills

Languages: Python, Java, C, C++, Go, JavaScript

Tools/Frameworks: Git, SciPy ecosystem (numpy, scipy, pandas, matplotlib, scikit-learn), OpenCV, Tensorflow, PyTorch, Kubernetes, React

Work Experience

Product Engineering Intern – Asana Summer 2020

- Completed and launched a feature that sends a user an email receipt whenever they submit an Asana Form, involving a careful investigation of appropriate rate limiting
- Completed and launched a feature that allows users to upload a custom cover image for their Asana Form
- Worked across the entire Asana stack, including JavaScript, TypeScript, Python, React, NodeJS, and AWS Lambda

Data Science Platform Intern – Bloomberg Summer 2019

- Wrote a custom Kubernetes controller in Go in order to add distributed Tensorflow capabilities to an internal data science computing cluster
- Worked to train and benchmark large deep learning models in a distributed manner using my new features
- Gave a talk at the 2019 Kubeflow summit in Sunnyvale, CA on my work and results

Engineering Intern – Silicon Labs Summers 2018, 2017, 2016

- Summer 2018: Created a web application allowing employees within the company to view and analyze live updating chip characterization data
- Summer 2017: Performed embedded firmware development on the Silicon Labs EFM32 microcontrollers, additionally creating a Wireless Encrypted Voice Communication Demo (link) that is showcased on the company's blog
- Summer 2016: Worked in the failure analysis lab to perform semiconductor device measurement and characterization, as well as wrote Python and VBA scripts for data parsing, analysis, and presentation

Research

The Personal Autonomous Robotics Lab (PeARL) – Undergraduate Researcher February 2021 – Present

- Ongoing research with deep hierarchical reinforcement learning

Texas Spacecraft Laboratory – Seeker Team (sites.utexas.edu/tsl/seeker) January 2019 – Present

- Individual technical contributions:
  - Worked on a custom-built pipeline for training and evaluating various deep computer vision models
  - Created a standalone Python library (Starfish) for generating synthetic training data using Blender that underpins our machine learning pipeline
  - Developed a custom model that achieved accurate real-time full pose estimation on a low-power embedded system
- Our Seeker-1 software was chosen by NASA over competing solutions and flew on an orbital mission September 2019
- Served as team lead from August 2019 – February 2021, during which we produced two conference publications

Publications

K. Black, S. Shankar, D. Fonseka, J. Deutsch, A. Dhir, and M. R. Akella, "Real-Time, Flight-Ready, Non-Cooperative Spacecraft Pose Estimation Using Monocular Imagery," *31st AAS/AIAA Space Flight Mechanics Meeting*, 2021.

C. Schubert, K. Black, D. Fonseka, A. Dhir, J. Deutsch, N. Dhamani, G. Martin, and M. R. Akella, "A Pipeline for Vision-Based On-Orbit Proximity Operations Using Deep Learning and Synthetic Imagery,", *2021 IEEE Aerospace Conference*, 2021.

Projects

Personal Projects – kevinblack.dev

- See my website/portfolio for other personal projects and their details