Kevin Black

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github.com/kevin3-black

Education

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

- Turing Scholars, Dean's Scholars honors programs
- Selected Coursework: Data structures/algorithms, discrete math, computer architecture, operating systems, linear algebra, differential equations, probability/statistics
- Cumulative GPA: 4.0

Skills

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

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

Work Experience

Software Infrastructure Intern – Bloomberg L.P. Summer 2019

- Wrote a custom Kubernetes controller in Go in order to add distributed Tensorflow capabilities to an internal data science computing cluster
- Integrated with Kubeflow components in order to support multiple distribution strategies, including Horovod
- 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

Systems Team 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

Extracurricular Activities

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

- The Seeker team aims to perform real-time position and pose estimation of spacecraft based on a camera feed
- Our Seeker-1 software was chosen by NASA over competing internal prototypes and flew on a mission September 2019
- Our team was funded to continue research and development, particularly on pose estimation, as well as applying our techniques to the upcoming Lunar Gateway space station
- Individual contributions:
  - Created a standalone Python library (Starfish) for generating synthetic training data using Blender that underpins our machine learning pipeline
  - Worked on other components of the pipeline for training and evaluating various deep computer vision models
  - Developed a custom model that achieved accurate real-time full pose estimation, surpassing our target speed of 1fps on a 1.7GHz processor
- All of the machine learning components are open source and can be found at github.com/autognc.

Projects

Vortex (devpost.com/software/911-call-handler) September 2019

- An automated 911 call handler intended for disaster relief scenarios
- Uses natural language processing to cluster calls by incident, summarize each incident in a few words, and generate an interactive heatmap of incidents
- Deployed to a Kubernetes cluster running an Express.js and MongoDB stack

FPGA Flight Controller (github.com/kevin3-black/fpga-flight-controller) May 2019

- A fully working quadcopter flight controller created completely from scratch using SystemVerilog
- Was able to fly a real custom-built drone with an onboard FPGA, gyroscope, and radio receiver

Syntype (devpost.com/software/syntype) February 2019

- A smart typing trainer for aspiring programmers
- Uses online machine learning to determine what patterns the user struggles with and and gives them syntactically valid practice code that focuses on their weak points
- Implemented with Pytorch on the backend and React on the frontend

Other Projects – kevinblack.dev

- Many more projects and details can be found on my personal website and portfolio