
Education

Arizona State University, Tempe AZ
Ira Fulton Schools of Engineering:

Aug 2020 - Present
PhD, Computer Science

Arizona State University, Tempe AZ
Ira Fulton Schools of Engineering:
College of Liberal Arts and Sciences:

GPA: 3.22
Bachelors of Science, Computer Science
Bachelors of Science, Molecular Biosciences & Biotechnology
Bachelors of Science, Mathematics
May 2018

Graduation Date:

Research Experience

Arizona State University, Tempe AZ

August 2021 - Present

Graduate Research, Biodesign Center for Applied Structural Biology, Advisor: Ross Maciejewski & Abhishek Singharoy

- Design and construct deep learning models to generate new structures in molecular protein dynamics based on potential energy
- Use TorchMD in order to train models that can generate physically viable structures and trajectories

Arizona State University, Tempe AZ

January 2020 - August 2021

Graduate Research, Advisor: Lalitha Sankar

- Conduct deep learning experiments on state of the art robust loss functions and α -loss

Arizona State University, Tempe AZ

August 2018 – Dec 2019

Graduate Research, Efficient Vehicles & Sustainable Transportation

- Collected and Aligned LiDAR and Camera data
 - ~ 30 hours of pedestrian LiDAR Data
 - ~ 2.5 hours of aligned LiDAR and varying focal length camera data
- Designed and developed deep learning models for distance estimation from camera data

Arizona State University, Tempe AZ

August 2017 – May 2018

Undergraduate Research Assistant/ Graduate Research, Biodesign

- Handling with Terabytes of Microbe Data for Network Analysis
- Utilize programs and programming to analyze data within ASU Research Computing Cluster (Saguaro)

Work Experience

American Express, Deer Valley AZ

June 2017 – August 2017

Software Engineer III Intern, ITSM Suite Development & Integration

- Designed, Implemented, and Documented ITSM API endpoints within Apigee for Internal American Express Customers (Departments)
- Tested API endpoints through SoapUI and Postman
- Developed basic MEAN stack applications and hosted them in American Express servers

American Express, Desert Ridge AZ

June 2016 – August 2016

Software Engineer III Intern, Employee and Communications Technology

- Designed and implemented a web application that retrieves relationships from a graph database (Neo4j) and visualizes said relationships within a graphical user interface (Javascript and AngularJS Framework)
- Implemented a Java program that imports American Express' data about its internal applications and technologies into a graph database.

Skills

Languages: Python

Libraries: pyTorch, pyTorch-geometric, numpy, matplotlib, TorchMD

Publications and Preprints

- Otstot, Kyle, **John Kevin Cava**, Tyler Sypherd, and Lalitha Sankar. "AugLoss: A Learning Methodology for Real-World Dataset Corruption." *arXiv preprint arXiv:2206.02286* (2022).
- **Cava, John Kevin**, John Vant, Nicholas Ho, Ankita Shulka, Pavan Turaga, Ross Maciejewski, and Abhishek Singharoy. "Towards Conditional Generation of Minimal Action Potential Pathways for Molecular Dynamics." *arXiv preprint arXiv:2111.14053* (2021).
- Sypherd, Tyler, Mario Diaz, **John Kevin Cava**, Gautam Dasarathy, Peter Kairouz, and Lalitha Sankar. "A Tunable Loss Function for Robust Classification: Calibration, Landscape, and Generalization." *arXiv preprint arXiv:1906.02314* (2020).
- Gupta, Chitrak, **John Kevin Cava**, Daipayan Sarkar, Eric A. Wilson, John Vant, Steven Murray, Abhishek Singharoy, and Shubhra Kanti Karmaker. "Mind reading of the proteins: Deep-learning to forecast molecular dynamics." *bioRxiv* (2020).
- **John Kevin Cava**, Todd Houghton, Hongbin Yu. Towards Generalizable Distance Estimation By Leveraging Graph Information. *Proceedings of the IEEE International Conference on Computer Vision Workshops 2019*.
- **John Kevin Cava**, Gaoyang Li, Wei Du, Huansheng Cao. WITOD: A Tool for Within-Taxon Operational Taxonomic Unit Diversity Analysis. *bioRxiv*, 813444