

Yuanbin Cheng

✉ cybsbbb@gmail.com | ✉ ychen871@ucr.edu | 📞 +1 213-952-0428
🌐 <https://cybsbbb.github.io/> | [linkedin.com/in/yuanbin-cheng-9452b7133/](https://www.linkedin.com/in/yuanbin-cheng-9452b7133/)

Education

University of California, Riverside Ph.D. Candidate, Computer Science and Engineering	Riverside, CA, Sept 2019 - Fall 2024 (Expected) GPA: 3.85
University of Southern California M.S. Computer Science	Los Angeles, CA, Jan 2017 - Dec 2018 GPA: 3.56
University of Science and Technology of China B.E. Computer Science	Hefei, China, Aug 2012 - Jun 2016 GPA: Top 20%

Experience

University of California, Riverside <i>Research Assistant</i>	Riverside, CA, Sept 2019 - Now
<ul style="list-style-type: none">Developed a big-data management system using Hadoop, Spark, and Kafka to process and visualize Terabytes of electronic power system streaming data with Node.js and React.Designed machine learning-based algorithms for real-time power system event detection using Tensorflow, multi-variable time-series forecasting with PyTorch, and adversarial attack and defense algorithms.	
Robert Bosch LLC <i>Data Engineer Intern</i>	Sunnyvale, CA, Mar 2019 - Aug 2019
<ul style="list-style-type: none">Implemented a sanity check module in Spark Structured Streaming to ensure data correctness and validity.Integrated Apache Hudi into existing data pipelines to support record upserts and incremental queries.Collaborated on the open-source projects Apache Hudi to fix production environment issues in the system.	

Projects

Diffusion Model Based Adversarial Defense Method for Power System Event Classifier

- Investigated vulnerabilities in existing power system event classification models by multiple adversarial attacks.
- Developed a novel diffusion model-based defense method to mitigate the effects of adversarial attacks.
- Demonstrated that the proposed defense model significantly increases accuracy and is computationally efficient.

Real-time Event Detection for Dynamic Power System

- Developed a Bidirectional Generative Adversarial Networks (BiGAN) based power system event detection algorithm using TensorFlow, incorporating conditional entropy constraints and graph signal processing sorting.
- Integrated the algorithm with a distributed streaming platform based on Apache Kafka, Hadoop, and Apache Spark to process and validate large-scale power system streaming data.
- Achieved higher accuracy than state-of-the-art event detection algorithms on large-scale real-world data.

Dynamic Power System Multi-Variable Time-Series Forecasting

- Designed and implemented a Long Short-Term Memory (LSTM) based time-series forecasting algorithm, enhanced with attention mechanism and prior knowledge matrix, using PyTorch.
- Decomposed the forecasting task into two separate trend and magnitude components. This approach yields superior performance compared to baseline models regarding MSE, RMSE, and MAPE.

React and Cloud Based Social Network

- Designed and implemented front-end UI using Ant Design, GeoLocation API, and Google Maps API.
- Built a scalable Go web service to handle posts, deploying to Google Cloud (GKE) for improved scaling.
- Implemented a secure token-based authentication flow with React Router v4 and server-side JWT authentication.
- Utilized Elasticsearch (GCE) to provide geo-location-based search functions for nearby post searches.

Publication

- Yuanbin Cheng**, Koji Yamashita, Jame Follum, and Nanpeng Yu, **Adversarial Purification for Data-Driven Power System Event Classifiers with Diffusion Models**, <https://arxiv.org/abs/2311.07110> under review, 2023.
- Yuanbin Cheng**, Brandon Foggo, Koji Yamashita, and Nanpeng Yu, **Missing Value Replacement for PMU Data via Deep Learning Model with Magnitude Trend Decoupling**, IEEE Access, vol. 11, 2023.
- Yuanbin Cheng**, Nanpeng Yu, Brandon Foggo, and Koji Yamashita, **Online Power System Event Detection via Bidirectional Generative Adversarial Networks**, IEEE Transactions on Power Systems, Nov. 2022.

Skills & Awards

Languages: Python, Java, C/C++, Scala, PHP, SQL, HTML/CSS, JavaScript, React, Node.js, Go

Technologies: PyTorch, TensorFlow, Hadoop, Spark, GCP, MySQL, MongoDB, Postgres/PostGIS, Docker, \LaTeX , Git

Awards: 26th ACM SIGSPATIAL 2018 SRC 3rd Place, Codeforces Rating: 1931, Leetcode Rating: 2583