Chengzhu Duan

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EDUCATION

University of California, San Diego — *La Jolla, CA*
Computer Science, B.S. — *Sept. 2017 – Apr. 2021*
GPA: 3.81 / 4.00 (Provost Honors)
Relevant Courses: Computer Operating System, Computer Networks, Computer Security, Computer Vision, Design & Analysis of Algorithms, Software Engineering, Deep Learning & Natural Language

WORK EXPERIENCE

Coinbase — *San Francisco, CA*
Software Engineer Intern — *Jun. 2020 – Sept. 2020*
- Streamlined an in-app invoice workflow for Coinbase Custody that will save finance and operation team **40** hours of phone call per week, claim back **$350K** unpaid invoice, and provide **800+** Custody Organizations with timely invoices
- Built scalable backend automatic billing service, invoice service and email notification service with **Ruby on Rails**
- Ensured fast UI load time with proper frontend caching through **Rest Hooks** and **SWR**
- Automatized Custody invoice PDF generation and storage in **AWS S3** with the use of **Rails ERB template** and **Puppeteer**

Omniscience Corporation — *Palo Alto, CA*
Software Engineer Intern — *Jul. 2019 – Sept. 2019*
- Expedited image resizing and uploading to **AWS S3** by using **Thumbnailator** to reduce **30%** thumbnail load time
- Constructed an scalable **RESTful Flask** app with **Swagger Codegen** and **SQLAlchemy** for reliable underwriting automation
- Implemented document uploading, sharing, editing, and labeling across multiple online platforms with **Angular**, **Spring Boot**, and **AWS S3** for thousands of underwriters from large insurance companies (e.g. RGA Insurance, AIA Group)

Voyager Space Technologies — *La Jolla, CA*
Software Engineer Intern — *Jan. 2019 – Apr. 2019*
- Avoided excessive database queries by implementing pre-fetching cache with **Django** Serializer to reduce **80%** load time
- Built a custom app loading module with **Angular** to ensure browser compatibility and compile the appropriate CSS
- Streamlined an efficient satellite design process for **300+** aerospace engineers by conducting robust backend and frontend tests with **Django** testing framework and **Jasmine/Karma**

RESEARCH PROJECTS

Predicting Video Game Playtime Before Purchasing
Mentor: Prof. Julian McAuley, UCSD — *Sept. 2018 – Jun. 2019*
- Achieved **93%** accuracy on predicting whether users will play purchased video games with **Bayesian Personalized Ranking**
- Utilized **Scipy** and **Scikit-Learn** to apply popular visualization and data-processing practices (e.g. **t-SNE**) on huge real world data and build custom machine learning pipeline (e.g. BPR with a sigmoid activation function)
- Optimized the model training with **stochastic gradient descent** through **map-reduce** and **negative sampling**

PROJECTS

Swag-Bot — ★ *59* ⑂ *46*
</> *Node.js, Mongoose, MySQL* — *Jul. 2018 – Jun. 2019*
- Established a point/coin system for **15** Discord servers with **500+** users by combining usages of both **MySQL** and **MongoDB**
- Created 77 commands capable of manipulating texts and images and visualizing data and statistics through third-party APIs
- Designed a **Music Task Scheduler** on top of Discord's audio stream in voice channels with YouTube API and **Node.js**
- Implemented an **Anti-Spam Filter** to prohibit members from spanning, cursing, and other inappropriate conducts in channels

Building Search Engine
</> *Angular, Flask, Node.js, MySQL, Tensorflow, Pytorch, Docker, C++, RPC* — *Jan. 2020 – Present*
- Coupled **Angular** components with **Plotly** to display interactive visualizations for terabytes of IoT time-series data
- Engineered query evaluation with **Sliding Window Feature Extraction** and **Locality-Sensitive Hashing** of metadata
- Implemented an efficient time-series query matching pipeline that utilizes a heuristic **Dynamic Time Warping** algorithm to search across **20 Million** data points in less than **3 seconds**

Celebrity Face Classifier
</> *Pytorch, CUDA* — *Oct. 2019 – Nov. 2019*
- Increased **CNN**'s Balanced Classification Rate by **15%** with the use of **Batch Normalization** and **K-Fold Cross-Validation**
- Performed **Transfer Learning** on **ResNet18** which outperformed baseline model by **20%** and significantly reduced training time
- Incorporated **Data Augmentation** into the pipeline to avoid overfitting and achieve translational and rotational invariance

SKILLS

Programming & Markup Languages: Python, Java, Javascript/Typescript, Ruby, C/C++, HTML/CSS, LaTeX
Frameworks & Libraries: React, Angular, Ruby on Rails, Node.js, Django, Flask, Pytorch, jQuery, Selenium
Databases: MySQL, PostgreSQL, MongoDB, Firebase
Tools & Methodologies: Unix/Linux, Git, Continuous Integration, Agile Methodology, Design Patterns
Extracurriculars: Project Manager @ Triton Software Engineering, Member @ Tau Beta Pi Engineering Honor Society