Haley Lai

Software Engineer

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Experience

Software Engineer | TSMC

July 2021 – Present Hsinchu, Taiwan

- Built web crawler, web application, and automated programs to ensure mask data accuracy - reducing mask scrap risk 15%
- Re-engineered customer mask data integrated system – reducing future maintenance time by over 30%
- Worked with the software architecture team to improve new internal IDE - provide feedback, code samples, and documentation

Risk Advisory Intern | Deloitte

Sep 2020 – Mar 2021 Taipei, Taiwan

- Web scraped news, technologies, and cybersecurity-related information using Python and Selenium
- Made automated tools with Python to manipulate data, such as classifying, analyzing statistically, and consolidating data
- Developed internal tools using React Native and Microsoft Azure
- Assisted the data analytics team to build a NLP model using BERT framework

National Security Intern | Qualcomm Institute, UCSD

Jan 2020 – Mar 2020 La Jolla, CA

- Developed innovative solutions to national security problems
- Worked with U.S. DOD leaders and students from different majors to deliver viable products that match DoD/IC users' needs in an extremely short time
- Interviewed people involved with issues; consolidated and reported their needs to leaders and advisors
- Learned to develop sustainable and repeatable model that can be used to launch other potential technology solutions

Summary

Motivated and results-driven software engineer. Have passion to learn new skills to develop innovative solutions to challenging problems. Patent pending for company's first real-time machine learning anomaly detection mechanism for reticle manufacturing.

Technical Skills

Programming Languages

Python, Java, JavaScript, C++, Oracle PL/SQL

Web/APP Dev

HTML, CSS, JSP, Vue.js, Tailwind, WebLogic, React.js

Libraries & Frameworks

TensorFlow, NumPy, Pandas, Matplotlib, Pytest, Scikit-Learn, Jupyter Notebook

Education

University of California San Diego

Graduated Jun 2021 La Jolla, CA

Bachelor of Science in Math and Computer Science

Activities

- Voluntarily joined TSMC's AI core team to tutor math and introduce AI at elementary schools
- Attend AI Accelerator seminars lectured by HT Kung and presented the materials to the department

Projects

Multivariate Time Series Anomaly Detection System | Taiwan Semiconductor Manufacturing Co., Ltd.

- Developing a realtime machine learning anomaly detection system for mask writers using Python which reduced mask scrap rate 60%, saving the company over $2.4 million/year.
- Improved overall mask writing efficiency 30% by increasing throughput over +100 mask/year, optimizing the system, reducing response time by 80%, and decreasing writer's hold times
- Patent pending for process I created and coded as part of anomaly detection system
- Independently built anomaly detection system using Python from architecture design, including integration, testing, maintenance, monitoring, etc.
- Used Numpy, Pandas, Matplotlib, Scikit-Learn, and TensorFlow to analyze output data from mask writers to design a distance and pattern-based detection mechanism with the combination of statistical/data science methods and Machine Learning model

Awards

- Represented the department to win the annual Golden Trade Secret Award
- Represented the division and won an award in Excellent Proposal Competition
- Won 3rd place in the TSMC Continuous Improvement Team (CIT) contest