Min-Hsiu Hsu

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OBJECTIVE Looking for **Full-time positions** in **Data Science & Machine Learning**.

SKILLS Python (pandas, SciPy, scikit-learn, OpenCV, PyTorch, TenforFlow, Keras, Plotly), SQL, NoSQL (MongoDB, Neo4j), Web Development (Flask, HTML), AWS(RDS, EC2), GCP, CLI, MATLAB

EDUCATION

University of Illinois at Urbana-Champaign (UIUC), IL, U.S.A. Aug 2019 - present
M.S. in Mechanical Engineering

- **Current GPA:** 3.94/4.0
- **Research Fields:** Smart Manufacturing, Machine Learning, Data Science, Predictive analytics
- **Coursework:** Machine Learning, Data Science & Analytics, Database System, Convex Optimization

National Taiwan University (NTU), Taipei, Taiwan Sep 2014 – Jun 2018
B.S. in Mechanical Engineering

- **GPA**: 4.14/4.30, Rank 5/145 (Top 3%)
- **Honors/Awards:** 5 times *Presidential Award* (Dean's list)
- **Coursework:** Deep Learning, Scientific Computing, Statistical Process Control (SPC)

EXPERIENCE

Machine Learning Engineer Intern, Quantrend Technology Sep 2020 – Dec 2020

- **Project:** *Deep Reinforcement Learning for Financial Trading*
- **Goal:** Develop RL agents to produce trading strategies and validate its profitability in real market
- **Methodology:** Proximal Policy Optimization (PPO), GRU, Time series sampling and modeling
- **Impact:** Developed company's modular Reinforcement Learning codebase with pluggable deep neural network models, learning environments based on OpenAI Gym and StableBasline. Built machine-learning (ML) based quantitative trading strategies and training pipeline to automate and speed up hyperparameter tuning and model selection.

Data Science Intern at DS & ML Team, iRobot May 2020 – Aug 2020

- **Project:** *Roomba Mission Successful Rate Prediction with Smart Map Scoring*
- **Goal:** Investigate causality between Spatial Map Features and Roomba Mission Successful Rate
- **Methodology:** Spatial feature engineering (GIS data), clustering, regression, classification
- **Impact:** Developed map scoring system with AUC = 90% in binary classification to help root cause finding in robot failure, give insights in product improvement, and assist user personalized coaching.

Graduate Research Assistant at Automation & Digital Mfg Lab, UIUC Oct 2019 – present

- **Project:** *Sensor Fusion for Remaining Useful Life Estimation in Material Fatigue*
- **Goal:** Predict Remaining Useful Life (RUL) of recycled metal with Non-Destructive Testing method
- **Methodology:** Feature engineering (PCA, FFT, wavelet transform) in multi-sensor signals (infrared camera, ultrasound, acoustic emission), SVM, CNN+LSTM, sensor fusion/selection
- **Impact:** Systematized data storage and retrieval by deploying web app with MySQL database and predict remaining useful life of recycled materials with machine learning approaches.

Full-time Research Assistant at Biomedical Computed Imaging Lab, NTU Mar 2019 –Jul 2019

- **Project:** *AI in Medical Image*
- **Goal:** Develop AI system to detect abnormal structure in medical image and evaluate image quality
- Applied deep learning CNN models (YOLOv3, Faster-RCNN, RetinaNet) for detecting polyps in colonoscopy image. RetinaNet achieved 93% precision and 93% recall rate
- Built SVM classifier for classifying blurred and clear colonoscopy image with 98% F1 score

COURSE PROJECTS

Data Science & Analytics, Computer Science, UIUC Spring 2020

- Reliability analysis with Naive Bayes, hypothesis testing, probabilistic and statistical modeling
- Clustering groups with PCA, GMM; Bayesian Network to evaluate quality of stool sample

Term Project: *Food recommendation system based on purchase order history*

- Time series modeling to build sequenced-awared recommendation system (HMM, LSTM)

Manufacturing Data & Quality System, Mechanical Science and Engineering, UIUC Fall 2019
Course project: *Non-destructive Inspection of Photovoltaic Silicon Wafers*

- Achieved 90% F1 score in defect detection (object detection task) with image processing and CNN