Min-Hsiu Hsu

Personal Website Linkedin | mhhsu2@illinois.edu | (217) 979-2108

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

COURSES

Machine Learning, Deep Learning, Data Science & Analytics, Database System, Convex Optimization, Scientific Computing, Statistical Process Control (SPC), Manufacturing Data & Quality Systems

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

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)

EXPERIENCE

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.

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.

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
- 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

LANGUAGES   **Chinese (Mandarin)**: native, **English**: fluent (TOEFL iBT: 111)