Min-Hsueh Chiu

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Experienced Research Engineer with two years in software design, development, maintenance, and data analysis. Highly proficient in Python, machine learning frameworks, and database languages. Handled bug reports and met analytical data requests from 5+ cross-functional teams. Launched over 5+ interdisciplinary projects and tackled real-world challenges.

PROFESSIONAL EXPERIENCE

Research Engineer | Information Science Institute (USC), LA, CA, US 2021- present

Generating ***Novelty in Open-world*** *Multi-agent environments* (*Python, Shell, JavaScript, Pandas*) link1, link2

- Developed reinforcement learning agents that outperformed baseline performance by 10%
- Designed and constructed 10+ Monopoly gaming simulators and 60+ gaming variations for AI research
- Optimized experimental runtime by 60% through parallel computing and automated pipeline
- Created web-accessible and locally hosted real-time streaming data visualization tools and dashboards
- Integrated game simulator (Monopoly, Poker) with novelty generators into Open-AI gym infrastructure

Healthcare Search Engine (*Python, Pandas, Neo4j*)

- Improved 10% retrieval rate by integrating knowledge graph with search engine
- Ameliorated precision by 30% through the user query behavior analysis
- Architected a scalable system that facilitates weekly updates on 100K nodes and 1.7 million edges
- Designed natural language answering system by integrating large language model with knowledge graph

Identifying human trafficking networks *(Python, Pandas, SciPy, Neo4j*)

- Detected 3+ illicit cliques by implementing multi-class entity resolution and clustering
- Introduced cutting-edge data-driven technologies to assist law enforcement and jurisdiction
- Standardized data integration and ETL process from 6+ data sources
- Created ontology featuring 10+ semantic types and developed knowledge graphs with 10,000+ entities

Illegal immigration trajectory analysis *(Python, Pandas, Neo4j)*

- Identified 10+ statistical patterns over time among geography, policy, and law enforcement
- Conducted jurisdictional analysis and constructed a migration knowledge graph over 350+ cases

Programmer Analyst | University of Southern California, LA, CA, US 2021

Bitcoin transaction network (*Python, NetworkX, SciPy*)

- Proposed a Bitcoin transaction model with a directed acyclic graph, scaling to 1M+ nodes
- Achieved a 50% reduction in memory usage by optimizing data structures and storage efficiency
- Defined a new measurement based on network structure for evaluating cryptocurrency market activity
- Investigated time-dependent structural patterns in response to four major events in 2013

PROJECT

Inverse Molecular Design (Project link: GitHub and Medium) 2020

Molecule recommendation system for achieving desired properties (Python, RDKit, TensorFlow)

- Built variational autoencoder capable of generating over 10 molecules with optimal properties
- Established a molecular query system and modern web app with molecule visualization tools

EDUCATION

Master of Science in Analytics | University of Southern California, Los Angeles 2019–21

Master of Science in Engineering Science (Optoelectronics) | National Taiwan University, Taiwan 2014-17

Bachelor of Science in Electrical Engineering | National Taiwan Ocean University, Taiwan 2010-14