Min-Hsueh Chiu

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Experienced Research Engineer with a track record of two years in software design, development, maintenance, and data analysis. Proficient in Python, JavaScript, SQL, and Cypher. A collaborative team player with strong critical thinking skills and a penchant for innovative problem-solving. Passionate about initiating interdisciplinary projects and addressing 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, Matplotlib*)

- Designed and constructed 10+ Monopoly gaming simulators and 60+ gaming variations for AI research
- Developed reinforcement learning agents that outperformed baseline performance by 10%.
- Optimized experimental runtime by 60% through parallel computing and automated pipeline
- Created visualization tools capable of handling real-time streaming data
- Addressed bug reports and fulfilled analytical data requests from multiple cross-functional teams
- Integrated game simulator (Monopoly, Poker) into Open-AI gym infrastructure

Healthcare Search Engine Development (*Neo4j*, *Cypher, Python*)

- Architected a scalable and sustainable system, enabling 120K annual patient queries to locate the most suitable healthcare providers and facilities using custom keywords
- Developed efficient and precise information retrieval algorithms
- Leveraged natural language processing and machine learning to generalize query templates

Graph-related Interdisciplinary researches (Neo4j, Python)

- Introduced modern technologies in conventional domains
- Developed ontology with 10+ semantic types and 10K entities knowledge graphs
- Detected illicit cliques by implementing entity resolution with natural language processing
- Designed natural language query system by integrating large language model with graph database
- Delivered instructional lectures during summer programs

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

Feature exploration of Bitcoin transaction network (*Python, NetworkX, SciPy*)

- Developed a Bitcoin transaction model with directed acyclic graph, scaling to millions of nodes.
- Achieved a 50% reduction in memory usage by optimizing data structures and storage efficiency
- Created a novel metric for evaluating cryptocurrency market performance
- Investigated time-dependent structural patterns in response to major news events

PROJECT

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

Developed a molecule recommendation system for achieving desired properties (Python, RDKit, TensorFlow)

- Built a highly accurate generative model, achieving a mean squared error one order of magnitude smaller than experimental data, with a reconstruction rate of 99%
- Developed and optimized variational autoencoder (156-dimensional latent space)
- Established a molecular query system and modern web app with visualization tools, including molecular structure, predicted properties, and composition

EDUCATION

University of Southern California, Los Angeles, CA 2019–2021

- MS in Analytics**,** GPA: 3.76/4

National Taiwan University, Taipei, Taiwan 2014-2017

- M.S. in Engineering Science, Major in Optoelectronics, GPA: 3.76/4
- International Conference **Fellowship**, Ministry of Science and Technology, Taiwan

National Taiwan Ocean University, Keelung, Taiwan 2010-2014

- B.S. in Electrical Engineering, Major in Semiconductor, GPA: 3.87/4, Rank: 5/90
- Chau-Ting Chang Summer Research **Scholarship**, Academia Sinica, Taiwan