CHIA-EN LU

La Jolla, California
+1-331-341-8507 | chiaen119@gmail.com | Chia-En Lu

EDUCATION

University of California, San Diego *Sept. 2024 - June 2026 (Projected)*
Master of Science in Computer Science CA, U.S.A.

National Tsing Hua University (NTHU) *Sept. 2019 - June 2023*
Bachelor of Science in Computer Science, Minor in Arts and Design Hsinchu, Taiwan

- GPA: 3.89/4.0 (WES)

WORK EXPERIENCE

Taiwan AI Labs | *Python, C++* *June 2024 - Aug. 2024*
Software Engineering Intern Taipei, Taiwan

- Engineered a neural machine translation system for Truku (aboriginal language) to improve hospital communication
- Partnered with hospital administrators and Indigenous community leaders to tailor the translation system, ensuring cultural
- Improved BLEU score from 28 to 32 and lowered training time by 13% by utilizing in-domain fine-tuning with Dynamic Data Selection while preserving generalization capabilities
- Utilized retrieval methods for LLM for medical training data augmentation, achieved a BLEU score of 37.5 and TER of 41 for medical document translation

Institute of Information Science, Academia Sinica | *Python, C++* *July 2023 - Nov. 2023*
Research Assistant, PI: Prof. De-Nian Yang Taipei, Taiwan

- Designed and implemented a Knowledge Graph Query system for industry company matching, integrating NLP and GNNs for structural analysis and graph matching
- Collaborated with industry leads and professors to refine system design, balancing query speed with advanced functionality
- Optimized query performance by developing a modified A* algorithm, resulting in a 3x improvement in search speed
- Achieved 93% accuracy and 86% precision in link prediction, tail prediction, and complex query matching

RESEARCH EXPERIENCE

Auto-generation of mammogram reports with KangNing General Hospital (KNH) *Apr. 2023 - Dec. 2023*
Research Assistant at NTHU Human-Centered Machine Intelligence Lab, PI: Prof. Po-Chih Kuo Hsinchu, Taiwan

- Collaborated with KNH medical professionals to align AI solutions with clinical needs, ensuring practical applicability in real-world healthcare settings
- Fine-tuned a medical BERT model for BI-RADS-compliant mammogram report generation, achieving a 78% BLEU-1 score
- Engineered a t ConvNeXt-based density classifier, attaining an 85% average f1-score in breast density categorization
- Developed a hybrid object detection system integrating YOLO architecture with grid-based analysis, achieving 85% accuracy for mass detection in breast mammograms

Reinforcement Learning on Electronic Design Automation (EDA) *Jan. 2022 - Aug. 2023*
Undergraduate researcher at NTHU TC Lab, PI: Prof. Ting-Chi Wang Hsinchu, Taiwan

- Developed and implemented a Reinforcement Learning (RL) agent for optimizing floorplan refinements and chip placement, significantly reducing time and computational resources in the VLSI design process
- Engineered a cell-grouping algorithm leveraging key properties (routing requirements, energy consumption, and pin location), reducing problem dimensionality and enhancing solution stability and robustness in chip design
- Achieved a 5x speed improvement over RePlAce (a widely used placement tool) while maintaining comparable performance in critical metrics: congestion, Half-Perimeter Wirelength (HPWL), and routability
- Recognized as a Global Finalist in the prestigious IEEE/ACM Machine Learning for CAD 2023 FPGA Macro-Placement Contest

SELECTED PROJECTS

6-Degree-of-Freedom Robot Arm with Deep Reinforcement Learning | *PyTorch, ROS, OpenCV* *Jan. 2022 - July 2022*

- Developed a simulation environment in Unity, enabling efficient training of a Deep Deterministic Policy Gradient (DDPG) reinforcement learning agent for complex arm control
- Designed and fabricated a high-precision 6-DOF robot arm from concept to prototype, utilizing AutoCAD for detailed modeling and optimizing for manufacturability and performance
- Implemented computer vision algorithms with OpenCV and PyTorch to enhance the arm's perception and object interaction capabilities in real-world scenarios

SKILLS

Programming & Development: Python, C/C++, JavaScript, Rust, React, Node.js, Docker, Kubernetes
Machine Learning: PyTorch, TensorFlow, Scikit-Learn, Natural Language Processing, Computer Vision
Research & Industry Tools: Git, ROS, OpenCV, AutoCAD, Rhino7