MING-RUEY(RAY) CHOU

Fields: Computer vision algorithm development and optimization
Tools & Libraries: OpenCV, Tensorflow, Jax, Docker, Git
Programming Languages: Python, C#, C++, CUDA
Operating System: Linux, Windows
Software Design: Object-oriented programming, Test-driven development

MingRuey
ming-ruey-chou
imchou239@gmail.com

Summary

Ray is a software engineer with 3-years of experience applying traditional image processing and deep learning techniques to solve real-world problems. He has a creative mind for inventing novel algorithms and hands-on skills for writing production-level codes and optimizing them for real-time usage.

Experience

Machine Learning Engineer - Geosciences of Princeton University, NJ, USA *2021 JUL - Current*

Physics assisted machine learning for understanding ice dynamics at Lai Research Group

· Achieve 5x speed-up on single GPU and linear speed gain on parallel computing over GPUs with Jax

· Promote the code transparency and reproducibility by clear documentation and robust environment control

Computer Vision Engineer - UTECHZONE, Taipei, Taiwan *2019 - 2021 JUN*

Real-time defect detection in PCB & wafer manufacturing

Promotion to team lead: 2019 Sep

· Lead a team of four to develop a solution for PCB defect detection; blend traditional image processing with deep learning to reduce the false-negative rate by from 1000 to 100 ppm at >90% overall accuracy

· Key developer of a defect detection system targeting for CPU-GPU heterogeneous device; optimize program throughput via multithreading and writing CUDA C to offload computations to GPU

· Invent novel image processing algorithms: an algorithm for optical character verification, or OCV, with >80% accuracy, outperforming the existing (<50% accuracy); a fast and robust short and open circuit detector for wafer manufacturing

· Conduct failure analysis and performance improvement on object detection and classification models

· Design and develop a Python-based deep learning engine which becomes the canonical library of the company; set up automated tests for the library from scratch to >70% coverage

Education

M.Sc. in Physics - National Taiwan University *2016*

Thesis - Rheometry on Concentrated Suspension of Soft Particles

· Publish on Soft Matter - doi.org/10.1039/D0SM00405G

· Mandarin website - www.phys.sinica.edu.tw/jctsai/Ray2016/

B.Sc. in Physics - National Taiwan University *2013*

Other Experience

Teaching Assistant - Geosciences Department of Princeton University, NJ, USA *2021 Fall*

AOS551 Deep Learning in Geophysical Fluid Dynamics

Course/Project Designer - Twin Oaks Education, Taiwan *2018 - Current*

21st century learning for high school students: See-Think-Wonder Challenge, Camp for Business World

Substitute Services in Education - Xinyi Elementary School, Hualien Taiwan *2016 - 2017*