MING-RUEY(RAY) CHOU

Expertise: Computer vision and machine learning algorithm design and development
Programming Languages: Python, C++, C#, on Linux & Windows
Tools & Libraries: OpenCV, Tensorflow/PyTorch, Docker, Git
Language Skill: Chinese (native), English (fluent), Japanese (JLPT N1, fluent reading, basic speaking)

MingRuey
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Summary

Ray is an image expert and software engineer with six years of experience applying computer vision and deep learning to real-world problems. He develops and adapts algorithms, leveraging deep understanding of image sensor characteristics and system requirements, and deploys them in scalable, production-ready systems.

Experience

Computer Vision Engineer - Axelspace, Tokyo, Japan *2022 Apr - Present*

Designer & developer of satellite image processing pipeline for CMOS line sensor

· Review and integrate upstream/downstream requirements and payload characterization into pipeline design

· Develop key modules – camera model estimation and refinement, super-resolution via half-pixel shifts, and more

· Leverage AWS cloud infrastructure for scalable, high-volume image processing

Developer of mission simulator, accurate satellite digital twins for pipeline validation

· Model accurately the telescope, sensor, and space-Earth coordinates in Blender to analyze the effects of lens distortion, time delay and integration (TDI), and surface elevation

· Simulate key atmospheric and surface reflectance properties and implement an accurate BRDF

Machine Learning Engineer - Lai's Group, Geosciences of Princeton University, NJ, USA *2021 JUL - 2022 JAN*

Physics assisted machine learning for understanding ice dynamics

· Conduct systematic tests on neural networks combined with a physics-aware loss function

· Lead on setting up infrastructure aiming for massively parallel computing on the CPU/GPU cluster; also provide mentorship on lab members around the code development cycle

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

Real-time defect detection in PCB & wafer manufacturing; Promotion to team lead: 2020 Sep

· Lead a team of four to develop a noval solution blending deep-learning-based object detection with image processing; reduce the false-negative rate by from 1000 to 100 ppm at >90% overall accuracy

· Invent multiple novel image processing algorithms for wafer manufacturing defect detection; target for CPU-GPU heterogeneous system and maximize throughput via multithreading and offloading computations onto GPU

· 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 *2013 SEP - 2016 JUN*

Thesis - Rheometry on Concentrated Suspension of Soft Particles

· Publish on Soft Matter - doi.org/10.1039/D0SM00405G; website (Mandarin) www.phys.sinica.edu.tw/jctsai/Ray2016/

B.Sc. in Physics - National Taiwan University *2009 SEP - 2013 JUN*

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

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