Riu Cherdchusakulchai

rcherdch@andrew.cmu.edu | (412) 589-7796 | linkedin.com/in/riu-cherdchusakulchai | riuch.github.io/my-profile

EDUCATION

Carnegie Mellon University   Pittsburgh, PA
Master of Science in Computer Vision (MSCV) – Robotics Institute   *Dec 2026*
Selected Coursework: Advanced Computer Vision, Learning for 3D Vision, Robot Learning

Chulalongkorn University   Bangkok, Thailand
Bachelor of Engineering in Mechanical Engineering | First Class Honors   *May 2022*
Selected Coursework: Auto Control, Mechatronics, Internet of Things, Numerical Methods, Heat Transfer, Vibration

RESEARCH PROJECTS

Real-time Rendering of 3D Gaussian Splatting for AR / VR – CMU Human Sensing Lab   *Sep 2025 – Present*
- Advised by **Prof. Fernando De la Torre**; Worked on developing dynamic scene reconstruction with high rendering quality for AR / VR streaming applications.

Multi-target Multi-camera People Tracking – AI and Robotics Ventures   *Jan 2024 – Apr 2024*
- Developed an online method for near real-time multi-camera tracking by introducing a global state of anchors from past tracking results and dynamically updating them based on new data in the current time window.
- Introduced a spatial-temporal mechanism, leveraging spatial and temporal data to create constraints combined with anchor-feature hierarchical clustering, achieving a final score of 69.10 IDF1 on the AIC24 challenge dataset.
- Experimented with GNN models to encode object relationships and perform association and implemented a self-supervised camera link model to learn inter-camera relationships without labeled data.
- Presented and published the paper: *"Online multi-camera people tracking with spatial-temporal mechanism and anchor-feature hierarchical clustering"* CVPR 2024 AI City Challenge Workshop (First author).

Contactless Body Measurement System using RGBD Camera – Chula DII lab   *Jun 2023 – Jan 2024*
- Utilized skeleton tracking and segmentation models to extract joint positions and body posture from RGBD images.
- Implemented a human reconstruction algorithm using pose graph optimization and point cloud processing to generate accurate 3D human models from a single fixed camera.
- Developed iterative measurement algorithms to precisely calculate key body dimensions (height, waist, hip)
- Published the paper: *"Contactless Body Measurement System Using Single Fixed-Point RGBD Camera Based on Pose Graph Reconstruction"* IEEE Access, 2024 (First author).

PROFESSIONAL EXPERIENCE

AI and Robotics Ventures   Bangkok, Thailand
Machine Learning Engineer   *May 2022 – May 2025*

Traffic Safety Captioning and Visual Question Answering
- Adopted CityLLaVA method for data preprocessing, view selection, and spatially guided visual prompting.
- Fine-tuned the 38B-parameter InternVL model on 3x H100 GPUs using a resource-efficient LoRA method.
- Published the paper: *"TrafficInternVL: Spatially-Guided Fine-Tuning with Caption Refinement for Fine-Grained Traffic Safety Captioning and Visual Question Answering"* ICCV 2025 AI City Challenge Workshop (First author).

DEEPZOOM: ML Inference Pipeline for Visual Intelligence Product
- Architected a configuration-driven ML inference pipeline to streamline data integration, supporting over 10 dynamic task customization (e.g., security alerts, people search, face recognition, license plate recognition).
- Developed, deployed, and scaled Kafka microservices on Kubernetes clusters for the ML inference pipeline, establishing a reusable template for service integration, capable of processing 50 live camera streams.
- Implemented a Milvus vector database schema for Tracklet data and designed relational tables for efficient storage and retrieval of feature vectors from ReID, face encoding, and open-vocabulary models.

ARV Robot: 6D Object Pose Estimation for Remote Valve Operation
- Planned and collected a diverse valve dataset of over 300,000 RGBD images at an offshore platform.
- Developed a robust pipeline for 6D dataset formatting, labeling, and post-processing using Open3D and AWS.
- Experimented with PoseCNN, DenseFusion, and PVN3D to identify the best approach by evaluating ADD-S score.
- Deployed the final model as a ROS node, enabling a 90% success rate for remote robotic grasping operations.

SKILLS

Programming Languages: Python, C++, Bash
Library/Framework: OpenCV, Pytorch, Tensorflow, Pytorch3D, Pytorch Geometric, Hugging Face, MMDetection3D, Pillow, Keras, Transformers, Gymnasium, NumPy, Pandas, Scikit-learn, SciPy, Matplotlib, ROS2, FastAPI
Software/Tools: Git, DVC, Docker, Docker Compose, Argo CD, Lens, Harbor, Kubernetes, AWS CLI, Crontab, VSCode, Kafka, Milvus, MongoDB, EC2, SageMaker