

Riu Cherdchusakulchai

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

EDUCATION

Carnegie Mellon University

Master of Science in Computer Vision (MSCV) – Robotics Institute

Pittsburgh, PA

Dec 2026

Selected Coursework: Advanced Computer Vision, Learning for 3D Vision, Robot Learning, Physics-based Rendering

Chulalongkorn University

Bachelor of Engineering in Mechanical Engineering | First Class Honors

Bangkok, Thailand

May 2022

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, architected a C++/CUDA VR viewer for Dynamic Gaussian Splatting, implementing asynchronous pipelines and custom kernels to achieve 72+ FPS on complex scenes for VR streaming.
- Developing a novel hybrid representation with Exact Volumetric Flats that replaces approximate depth sorting with analytical ray tracing, successfully eliminating temporal popping and recovering stable surface normals.

Open-Vocabulary Scene Understanding for 3D Gaussian Splatting

Sep 2025 – Dec 2025

- Developed method based on OpenGaussian and StreetGaussian for zero-shot semantic understanding. Used masks from SAM to facilitate learning of open vocabulary language embeddings for answering natural language queries.

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.

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.

PROFESSIONAL EXPERIENCE

AI and Robotics Ventures

Machine Learning Engineer

Bangkok, Thailand

May 2022 – May 2025

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, Argo CD, Lens, Harbor, Kubernetes, Kafka, Milvus, MongoDB, EC2, SageMaker

PUBLICATION

R. Cherdchusakulchai et al., “**TrafficInternVL: Spatially-Guided Fine-Tuning with Caption Refinement for Fine-Grained Traffic Safety Captioning and Visual Question Answering**,” ICCV Workshops 2025 (First author)

R. Cherdchusakulchai et al., “**Online multi-camera people tracking with spatial-temporal mechanism and anchor-feature hierarchical clustering**,” CVPR Workshops 2024 (First author)

R. Cherdchusakulchai et al., “**Contactless Body Measurement System Using Single Fixed-Point RGBD Camera Based on Pose Graph Reconstruction**,” IEEE Access 12, 2024 (First author)