Rangel Daroya

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EDUCATION

University of Massachusetts, Amherst, MA
PhD Computer Science   September 2022 – Present

University of the Philippines, Quezon City, Philippines
MS Electrical Engineering (Equivalent GPA: 3.95/4.00)   January 2018 – July 2020
- Thesis: *"REIN: Flexible mesh generation from point clouds"* [paper]

University of the Philippines, Quezon City, Philippines
BS Electronics and Communications Engineering   June 2012 – June 2017
- Undergraduate Project: *"NDVI image extraction of an agricultural land using an autonomous quadcopter with a filter-modified camera"* [paper]
- Summa Cum Laude, top 2 in the graduating class of 2017 with more than 3,000 students

PUBLICATIONS

- **Rangel Daroya***, Aaron Sun*, and Subhransu Maji. COSE: A Consistency-Sensitivity Metric for Saliency on Image Classification. Paper accepted in VIPriors at ICCV 2023 [project page]
- **Rangel Daroya**, Rowel Atienza, and Rhandley Cajote. REIN: Flexible mesh generation from point clouds. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, pages 352–353, 2020. [paper]
- **Rangel Daroya**, Daryl Peralta, and Prospero Naval. Alphabet sign language image classification using deep learning. In *Proceedings of the IEEE Region 10 Conference*, pages 0646–0650, 2018. [paper]
- **Rangel Daroya** and Manuel Ramos. NDVI image extraction of an agricultural land using an autonomous quadcopter with a filter-modified camera. In *Proceedings of the IEEE International Conference on Control System, Computing and Engineering*, pages 110–114, 2017. [paper]

WORK EXPERIENCE

University of Massachusetts, Amherst, MA
Research Assistant   September 2022 – Present
- Using ML and computer vision to monitor water and sediment movements in Earth's rivers using satellite images

University of the Philippines, Quezon City, Philippines
Senior Lecturer 1   August 2021 – August 2022
Lecturer 2   January 2018 – July 2021
- Taught undergraduate courses on various topics about circuits, telecommunications, and MATLAB/Python programming. Also taught courses related to systems modeling, simulation, and circuit design using LTSpice.
- Designed and calibrated lectures and exercises with other faculty members for topics related to basic Python programming and robotics using Robot Operating System.

De La Salle University, Manila, Philippines
Lecturer   March 2022 – August 2022
- Taught undergraduate courses on topics related to energy conversion, AC/DC motor operation, machine learning basics, and MATLAB programming

Thinking Machines Data Science [https://thinkingmachin.es/]
Machine Learning Researcher   February 2020 – January 2022
- Designed and implemented machine learning models for different client needs involving clustering, forecasting, and optimization.
  - Successfully delivered and deployed models on sentiment analysis and community detection for millions of users within the first 6 months. The first model resulted in a 20% recall increase, whereas the second model resulted in 10% recall increase compared to baseline.
  - Created and delivered a model for predicting facility utilization of a telecommunications company with >80% accuracy. This resulted in a signed project worth $1-2 million.
  - Developed primarily with Python, Google Cloud Platform, and BigQuery.

- Developed cloud-based web/data analytics applications by performing backend (primary) and DevOps roles for an investment firm with >$300 billion in assets under management. The application was regularly used by ~30 users and was eventually scaled to ~300 users due to its usability for deal discovery and portfolio monitoring. Developed primarily using Python, FastAPI, Red Hat OpenShift, Amazon Elastic Kubernetes Service, Elasticsearch, Kibana, Grafana, RedisGraph, PostgreSQL, Dagster, and CloudBees Jenkins.

Team Lead/Manager, Prediction/Deep Learning Team   April 2020 – January 2022
- Led a team in conceptualizing and developing computer vision models related to object detection and object classification for Philippine grocery shelves. The model has achieved more than 90% accuracy.
- Led a team and participated in developing machine learning tools to enable other data analysts and machine learning researchers to speed up their model development. Achieved an adoption rate of more than 50% of machine learning projects within the first 3 months of the release, and resulted in around 2x faster model development time.
- Mentored and managed five data analysts and machine learning researchers towards their intended career and development path in data science.

University of the Philippines

University Researcher III   May 2018 – January 2020
- Conducted research for a Philippine California Advanced Research Institutes (PCARI) project entitled *"AIRSCAN: Collaborative Aerial Robotics in Large-Scale Urban Infrastructure Management"* in collaboration with University of California Berkeley.
    - Proposed and implemented algorithms for 3D reconstruction, resulting in greater than 80% improvement to the surface reconstruction approach compared to baseline classical algorithms. This also resulted in the publication of a research paper.
    - Created an RNN-based 2D depth estimation solution that was on par with state of the art solutions
- Designed and executed a customized algorithm for 3D semantic building map augmentation and image object detection for industry partners. This work resulted in a patent submission.

HONORS AND AWARDS
- **Paul Utgoff Memorial Graduate Scholarship in Machine Learning**, UMass Amherst, 2023
    - Scholarship awarded to first year graduate students in the area of Machine Learning
- **GMA Network Student Excellence Award (Technology-based Category)**, Philippines, 2017
    - Award given to one graduating student per year out of all students throughout the Philippines that demonstrate leadership and excellence in the field of engineering
- **Oblation Scholar**, University of the Philippines, 2012-2017
    - Award given to the top 50 admission scores out of more than 60,000 applicants in the Philippines
- **Merit Scholar**, Philippines Department of Science and Technology, 2012-2017
    - Award given to students with scores belonging to the top 10% in a national academic exam
- **University Scholar**, University of the Philippines, 2012-2017
    - Awarded to undergraduate students with excellent general weighted average (GPA ~4.0/4.0)