Rangel Daroya

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EDUCATION

University of Massachusetts, Amherst, MA, USA
Ph.D. Computer Science (GPA: 4.00/4.00), September 2022 – September 2027 (expected)

- Exploring and understanding relationships between computer vision tasks, including multi-task and transfer learning, to effectively solve computer vision problems across different modalities (e.g., text, images).
- Developing improved data representations and embeddings to drive robust, generalizable models for real-world applications in environmental and scientific domains. [*Advisor: Subhransu Maji*]

University of the Philippines, Quezon City, Philippines
M.S. Electrical Engineering (GPA: 3.95/4.00), January 18 – July 2020

- Focused on 3D reconstruction of objects and buildings (Thesis: *"REIN: Flexible mesh generation from point clouds"* [paper])

B.S. Electronics and Communications Engineering (GPA: 3.89/4.00), June 2012 – June 2017

- 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 entire university with 3,000+ students.

PUBLICATIONS (Google Scholar)

1. **SuperRivolution: Fine-Scale Rivers from Coarse Temporal Satellite Imagery**
   Rangel Daroya, Subhransu Maji. *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV),* 2026. (to appear)
2. **RiverScope: High-Resolution River Masking Dataset** [paper]
   Rangel Daroya, Taylor Rowley, Jonathan Flores, Elisa Friedmann, Fiona Bennitt, Heejin An, Travis Simmons, Marissa Jean Hughes, Camryn L Kluetmeier, Solomon Kica, J Daniel Vélez, Sarah E Esenther, Thomas E Howard, Yanqi Ye, Audrey Turcotte, Colin Gleason, Subhransu Maji. *Association for the Advancement of Artificial Intelligence (AAAI)*, 2026. (to appear)
3. **WildSAT: Learning Satellite Image Representations from Wildlife Observations** [paper], Spotlight Talk at CV4E (ICCVW)
   Rangel Daroya, Elijah Cole, Oisin Mac Aodha, Grant Van Horn, Subhransu Maji. *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2025.
4. **Improving Satellite Imagery Masking using Multi-task and Transfer Learning** [paper]
   Rangel Daroya, Luisa Vieira Lucchese, Travis Simmons, Punwath Prum, Tamlin Pavelsky, John Gardner, Colin Gleason, Subhransu Maji. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS)*, 2025.
5. **T-SAM: Transductive Learning for Segment Anything Model** [paper]
   Rangel Daroya, Deepak Chandran, Subhransu Maji, Andrea Fanelli. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, 2025.
6. **Task2Box: Box Embeddings for Modeling Asymmetric Task Relationships** [paper], Highlight (11.9% of accepted papers)
   Rangel Daroya, Aaron Sun, Subhransu Maji. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024.
7. **COSE: A consistency-sensitivity metric for saliency on image classification** [paper]
   Rangel Daroya*, Aaron Sun*, Subhransu Maji. *IEEE/CVF International Conference on Computer Vision Workshops (ICCVW)*, 2023.
8. **REIN: Flexible mesh generation from point clouds** [paper]
   Rangel Daroya, Rowel Atienza, Rhandley Cajote. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, 2020.
9. **Alphabet sign language image classification using deep learning** [paper]
   Rangel Daroya, Daryl Peralta, Prospero Naval. *IEEE Region 10 Conference (TENCON)*, 2018.
10. **NDVI image extraction of an agricultural land using an autonomous quadcopter with a filter-modified camera** [paper]
    Rangel Daroya, Manuel Ramos. *IEEE International Conference on Control System, Computing and Engineering (ICCSCE)*, 2017.

WORK EXPERIENCE

University of Massachusetts, Amherst, MA, USA
Research Assistant, September 2022 – Present

- Developing multispectral satellite data representations using ML and computer vision to model water quality and sediment movements in Earth's rivers. This project resulted in a global model of suspended sediments for all rivers, and will be deployed to NASA PO.DAAC, an open-source data archive that collects, preserves, and provides access to ocean and climate data.

AngioInsight, Minnetonka, MN, USA
Engineering Intern (Part-time), June 2025 – August 2025

- Explored and implemented spatiotemporally dynamic segmentation algorithms for angiograms in medical applications.

Dolby Laboratories, San Francisco, CA, USA
Ph.D. Research Intern, May 2024 – August 2024

- Collaborated Dr. Andrea Fanelli, and Deepak Chandran on exploring task representations to improve performance and data efficiency of machine learning models. Resulted in a published paper in CVPRW 2025.

Thinking Machines Data Science, Taguig, Philippines [https://thinkingmachin.es/]
Team Lead & Machine Learning Researcher, February 2020 – January 2022

- 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 cloud-based web/data analytics applications by performing backend (primary) and DevOps roles for an investment firm with >$300 billion in assets under management. Developed primarily using Python, FastAPI, Red Hat OpenShift, Amazon Elastic Kubernetes Service, Elasticsearch, Kibana, Grafana, RedisGraph, PostgreSQL, Dagster, and CloudBees Jenkins.

University of the Philippines, Quezon City, 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 a research paper.
- 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.

TEACHING EXPERIENCE

University of the Philippines, Quezon City, Philippines
Senior Lecturer, August 2021 – August 2022
Lecturer 2, January 2018 – July 2021

- Taught and organized undergraduate courses on circuit design, telecommunications, and MATLAB/Python programming.

De La Salle University, Manila, Philippines
Lecturer, March 2022 – August 2022

- Taught and organized undergraduate courses on energy conversion, AC/DC motor operation, and machine learning basics.

HONORS AND AWARDS

- PhD Portfolio Distinction from University of Massachusetts, Amherst (2024)
  - Awarded to select PhD students meeting a high standard of completion, voted by faculty.
- Paul Utgoff Memorial Graduate Scholarship in Machine Learning from University of Massachusetts, Amherst (2023)
  - Competitive scholarship awarded to a first-year graduate student in Machine Learning.
- ICCV Travel Grant for Broadening Participation (2025)
- CVPR Travel Grant for inclusion (2024)
- Oblation Scholar at University of the Philippines (2012-2017)
  - Prestigious full scholarship given every year to the top 50 of 60,000+ university applicants in the Philippines.

PATENT

- **Semantic Three-dimensional (3D) Building Augmentation,** PH12021050443 (2025). Inventors: Shakira Arguelles, Ferdinand John Briones, Izza Claire Jalandoni, Wonkyun Park, Jonric Mirando, James Carl Necio, Raimarc Dionido, Rowel Atienza, Soonyoung Lee, Rangel Daroya, Daryl Peralta.

PROFESSIONAL ACTIVITIES

- Co-organizer of Machine Learning and Friends Lunch (MLFL) at University of Massachusetts, Amherst (2024 – present) [page]
  - MLFL is a weekly interactive forum at the university where we invite researchers to talk about their field of expertise
- Mentor, Early Research Scholars Program for undergraduate students at University of Massachusetts, Amherst (2024 – present)
- Ph.D. Application Reviewer at University of Massachusetts, Amherst (2023, 2024)
- Reviewer for IJCV 2024, ECCV 2024, CVPR 2025, ICCV 2025, NeurIPS 2025, AAAI 2026
- Mentor, GradMAP Philippines for STEM career mentorship (2022-2024) [page]

SKILLS

- Programming Languages: Python, MATLAB, C/C++
- Machine Learning: PyTorch, Tensorflow, scikit-learn, NumPy, Pandas, SciPy
- Others: Git, Docker, Latex