JIMUEL CELESTE JR.

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RESEARCH INTERESTS

Health Data Science, Epidemiology, Mental Health, Infectious Diseases, Disease Surveillance, Equitable Healthcare Access

EDUCATION

University of Alberta (2023 – 2025, expected)
MSc Computing Science, 3.8/4.0 GPA: Systematizing machine learning of speech for mental health inference

University of the Philippines Diliman (2017 – 2021); partly online due to COVID-19
BSc Computer Science, *cum laude*: Age-Stratified COVID-19 agent-based model

FUNDING & AWARDS

Columbia University Epidemiology Summer School Scholarship 2024 (1,000 USD)
University of Alberta Graduate Student Funding 2023 – present (~40,000 CAD)
University of Alberta Graduate Recruitment Scholarship 2023 (5,000 CAD)
Best Oral Presenter Award, Philippine Geomatics Symposium 2021
Cum Laude, University of the Philippines Diliman 2021
Dean's & President's List, University of the Philippines Diliman 2018 - 2021

RESEARCH & PUBLIC HEALTH EXPERIENCE

MSc Research, Department of Computing Science, University of Alberta (2024 – present)

- Training machine learning models for prediction of mental health and neurocognitive conditions using speech
- Improving experiment reproducibility and explainability by developing configurable software pipelines
- Performing validation experiments with Depression, Mild Cognitive Impairment, & Alzheimer's Dementia datasets
- Submitted a proposal to study the feasibility of using speech to detect suicidality from crisis hotline calls
- Collaborating with researchers from the University of Oviedo to study Primary Progressive Aphasia
- Presented findings in an invited oral presentation in the Philippines
- Submitted a manuscript for journal publication

Graduate Researcher, The Atipan+ Project, Western Visayas, Philippines (2024 – present)

- Gaining experience in complex adaptive systems modelling and economic modelling for Public Health
- Developing a cost model for community-based telehealth adoption in remote communities in the Philippines
- Led the development of a causal-loop diagram model of the Atipan+ telehealth system
- Collaborating with Prof. Arto Ohinmaa from the School of Public Health, University of Alberta
- Leading a team of five researchers from the Philippines

Data Coordinator, The Atipan Project, Western Visayas, Philippines (2022 – 2023)

- Analysed electronic medical records for diseases monitoring, medical needs assessment, and admin planning
- Developed bespoke data analytics tools for cleaning, summarization, and visualization
- Led the writing of data analytics reports: 10 community health profiles and 7 project monitoring and evaluation
- Joined community visits to set-up telehealth infrastructure in partner communities

- Interviewed community leaders and members to contextualize data analytics findings
- Presented data analytics results to various stakeholders: communities, project team, funding agency
- Collaborated with visiting students from Brigham Young University & University of North Carolina at Chapel Hill
- Published a manuscript in a Public Health Journal

Research Assistant, Department of Computer Science, University of the Philippines Diliman (2021 – 2023)

- Analysed COVID-19 mortality rates in Philippine provinces from 2020 to 2023
- Submitted an article to World Health Organization Western Pacific Surveillance and Response Journal
- Developed an SEIR agent-based model for COVID-19 spread
- Simulated vaccination and school reopening scenarios in the Philippines
- Studied SEIR ordinary differential equation models with numerical methods and dynamical systems methods
- Co-supervised undergraduate research students (4) and summer interns (8)
- Collaborated with researchers from PILAR Research Network UK and Ehime University Japan
- Presented findings in a local conference in the Philippines
- Published a journal article and two conference papers

SOFTWARE ENGINEERING EXPERIENCE

Software Engineer, Center for Informatics, University of San Agustin, Philippines (2021 – 2023)

- Designed a database for mental health indicators reporting based on the Philippines Mental Health Strategic Plan for 2019 - 2023
- Joined the Philippine delegation to the Institute of Mental Health Singapore to benchmark their mental health information systems
- Designed and developed a prototype of the Negros Occidental Mental Health Information Registry for Negros Occidental Rehabilitation Foundation Inc.

Software Engineer, Department of Women and Development Studies, University of the Philippines Diliman; United Nations Women Philippines through Prof. Roselle Leah Rivera (2022 – 2023)

- Co-developed a protype of a digitalized gender- and migration-sensitive intake form for reporting of violence against Filipino migrant workers
- Co-wrote a corresponding data managers' guidebook
- Co-supervised 2 undergraduate research students
- Edited project reports for United Nations Women Philippines

Software Engineer & Intern, Philippine Genome Center (2020 & 2021)

- Developed a website for hosting of Genomics and Bioinformatics learning materials
- Developed software modules for the center's COVID-19 testing pipeline during the COVID-19 pandemic

RELEVANT COURSES & TRAININGS

Applied Suicide Intervention Skills Training, University of Alberta 2024
Introduction to Causal Inference with Longitudinal Data, Columbia University 2024 (virtual)
Systems Thinking in Public Health, John Hopkins University in Coursera 2023 (virtual)
Pandemic Preparedness, Alert, and Response, McGill University Summer Institutes in Global Health 2023 (virtual)
Environmental Modelling, University of the Philippines Diliman 2022 (virtual)
Numerical Solutions in Environmental Engineering, University of the Philippines Diliman 2021 (virtual)

REFEREES

Eleni Stroulia, Ph.D., Department of Computing Science, University of Alberta, Canada, stroulia@ualberta.ca

Romulo de Castro, Ph.D., Center for Informatics, University of San Agustin, Philippines, rdecastro@usa.edu.ph

PUBLICATIONS

Submitted Works

Celeste J, Sevilleja JE, Bongolan VP, Rivera RL, Caoili SE, de Castro R. 2024. COVID-19 mortality in the Philippines: A province-level analysis, 2020-2023. [Revised and Resubmitted, World Health Organization Western Pacific Surveillance and Response]

Celeste J, Tasnim M, Cuervo AV, de la Cal E, Stroulia E. 2024. A Software Pipeline for Systematizing Machine Learning of Speech Data. [Submitted, Computational Psychiatry Section of Frontiers in Psychiatry]

Journal Articles

Zamora PRFC, **Celeste J**, Rivera RL, Petrola JP, Aguila RN, Ledesma J, Ermoso MK, de Castro R. 2024. The ATIPAN project: A community-based digital health strategy toward UHC. Oxford Open Digital Health, 2, oqae011.

Bongolan VP, Francisco NA, Saliba MR, **Celeste J**. 2022. School Reopening Simulations with Covid-19 Agent-based Model for the Philippine Regions. Philippine Engineering Journal 43, 2. [Co-supervised Francisco and Saliba]

Conference Papers

Garcia A, **Celeste J**, Cheng I, Prudente V, Sanches I. 2024. Evaluation of multiple SAR speckling filter techniques performance in irrigated rice areas. ISPRS TC III Mid-term Symposium, 4–8 November 2024, Belém, Brazil. [Data Science Project with André Garcia, visiting PhD Student from National Institute for Space Research, Brazil]

Gaano JB, Rule C, **Celeste J**, Bongolan VP, Rivera RL, Caoili SE. 2023. Lessons learned from the COVID-19 pandemic: an analysis of regional Philippine data and COVID-19 outcomes. Philippine Geomatics Symposium 2023, 6–7 December 2023, Diliman, Quezon City, Philippines. [Co-supervised Gaano and Rule]

Celeste J, Bongolan VP. 2021. School Reopening Simulations with Covid-19 Agent-Based Model for Quezon City, Philippines. Philippine Geomatics Symposium 2021, 17–19 November 2021, virtual meeting. [Best Oral Presenter]

Invited Oral Presentation

Celeste J. 2024. A Software Pipeline for Extracting Mental Health Indicators from Speech. Iloilo International Informatics Conference, 20-21 June 2024, University of San Agustin, Iloilo City, Philippines.

Others

Celeste J, Zamora PFR, de Castro R, Rivera RL, dela Cruz C, Rivera HC, & Generalao O. 2023. Final Report: Digital Health Interventions for Underserved and Under Resourced Communities in the Era of COVID-19. [Project Report submitted to Asian Development Bank]

Reyes J, Carlos VR, Watkins J, **Celeste J**. 16 December 2021. COVID-19's impact on jobs and education: using data to cushion the blow. World Economic Forum Agenda. [Blog]