Rohit Murali

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in Linkedin profile

Research Interests

I develop artificial intelligence (AI) models to improve and advance health, well-being, and education. As a final year PhD student with skills in math and computer science, I bring a unique perspective in helping envision and understand what is possible with data and bringing AI models to reality.

Education

2020–2025 **Ph.D. in Computer Science (focus on AI)**, *University of British Columbia*, Vancouver, Canada.

2015–2020 **Master of Science + Bachelor of Science in Mathematics**, *Indian Institute of Science*, Bangalore, India.

Skills

AI/ML Deep Learning, Self-supervised Learning, Predictions for personalization, Sequential Interaction Data

Model deployment Experience training and deploying production-level AI models with AWS services like Sagemaker, S3, and Lambda.

Communication Writing research papers, Research presentations to non-technical clients, easy to collaborate with others with different expertise

Programming Python, Numpy, PyTorch, Keras, TensorFlow, Scikit-learn, MATLAB, LaTeX, Linux

Research Experience

May 2021 – Present **Data Scientist and AI Researcher**, *UBC Cloud Innovation Centre (UBC CIC)*, Vancouver, BC, Canada.

Projects I led:

AI Assisted Medical Image Segmentation of At-Risk Organs in Cancer Patients In cancer research, the segmentation of CT and MRI Scans is an important part of effectively providing treatment. We developed a machine-learning model to automate the medical image annotation process for head and neck organs on CT and MRI Scans.

Application to Assess Patients' Balance Level

Developed an AI model and app to predict patients' balance for Providence Health Care (PHC) Division of Physical Medicine and Rehabilitation (PM&R)

Heart Failure Patient Prognosticator

In 2019, Vancouver Coastal Health (VCH) and Providence Health Care (PHC) collaborated with Decision Support at VCH and Medical Quality Leadership & Practice teams, to create a data repository of patients with a primary diagnosis of heart failure. Using data from this repository, VCH and PHC cardiologists sought to demonstrate the feasibility of developing a machine-learning (ML) model for predicting the future risk profile of individual heart failure patients, based on their medical history.

September 2020 – Present **Graduate Research Assistantship**, *Department of Computer Science*, University of British Columbia, Vancouver, BC, Canada.

Developing predictive models for AI-driven personalization in education

My PhD work involved leveraging sequential interaction data such as eye-tracking and interface actions to build predictive models for learning (eg - to predict student emotions, to predict student class performance).

May 2019 – July 2019 **Summer Research Project**, *Department of Information Science*, University of Otago, Dunedin, New Zealand.

Bayesian Approach to Norm Mining in the GDELT Database

This work involved extracting and classifying data from the GDELT database and designing a software agent model that would work better than a purely probabilistic model.

Publications

An Intelligent Pedagogical Agent for In-The-Wild Interaction in an Open-Ended Learning Environment for Computational Thinking, Rohit Murali, Sébastien Lallé and Cristina Conati, The 124th ACM International Conference on Intelligent Virtual Agents (IVA), **2024**.

Automatic segmentation of Organs at Risk in Head and Neck cancer patients from CT and MRI scans, Sébastien Quetin, Andrew Heschl, Mauricio Murillo, Rohit Murali, Shirin A. Enger, Farhad Maleki, arxiv pre-print, **2024**.

Predicting Co-occurring Emotions in MetaTutor when Combining Eye-Tracking and Interaction Data from Separate User Studies, Rohit Murali, Cristina Conati and Roger Azevedo, The 13th International Learning, Analytics and Knowledge Conference (LAK), **2023**.

Predicting Co-Occurring Emotions from Eye-Tracking and Interaction Data in MetaTutor, Sébastien Lallé, Rohit Murali, Cristina Conati and Roger Azevedo, 22nd International Conference on Artificial Intelligence in Education, 2021. Springer Lecture Notes in Computer Science, volume 12748. **2021**

Murali R., Patnaik S., Cranefield S. (2021) Mining International Political Norms from the GDELT Database. In: Aler Tubella A., Cranefield S., Frantz C., Meneguzzi F., Vasconcelos W. (eds) Coordination, Organizations, Institutions, Norms, and Ethics for Governance of Multi-Agent Systems XIII. COIN 2017, COINE 2020. Springer Lecture Notes in Computer Science, vol 12298. **2020**

Extended Abstract - Mining International Political Norms from the GDELT Database, Rohit Murali, Suravi Patnaik, Stephen Cranefield, In Proceedings of the 19th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2020), IFAAMAS, 1943-1945, **2020**.

Awards and Scholarships

2021 – 2025 UBC 4-year Fellowships

2021 – 2025 AWS Cloud Innovation Centre Scholarship.

2015 – 2020 Recipient of KVPY (Kishore Vaigyanik Protsahan Yojana) scholarship for the duration of five years, 2015-2020, a national scholarship program in the basic sciences, initiated and funded by the Department of Science and Technology, Govt. of India.

2019 Funded by the Department of Information Science, University of Otago, for my stay during a summer research project in Dunedin.

2018 Certified for Psychological First Aid by NTSCN (National Child Traumatic Stress Network)