Wisang Sugiarta

438-830-2518 | wisang.sugiarta@umontreal.ca | wsugiarta.ca

Education

M.Sc. Computer Science — Present
University of Montreal & Mila — *Canada*

- Advisor: Emma Frejinger
- Coursework: Probabilistic Graphical Models, Causal Learning, Statistical Learning Theory, Representation Learning, Reinforcement Learning, Stochastic and Mathematical Programming.

B.Sc. Physics & Computer Science — 2021
McGill University — *Canada*

- Thesis: Deep learning for cancer cell segmentation in medical physics studies.

Experience

Scientific Research Intern — September 2021 – Present
Canadian Space Agency and Environment and Climate Change Canada — *Montreal, Canada*

- Part-time graduate research position in the Meteorological Research division.
- Work hand-in-hand with NASA scientists to develop software that can predict river flow using data from satellites.
- Develop and optimize state of the art machine learning models in hydrodynamic modeling, tidal analysis and prediction in rivers.

Graduate Researcher — Jan. 2021 – Present
Mila, Institute for Research in Immunology and Cancer — *Montreal, Canada*

- Reinforcement learning and dynamic discrete choice modeling for path choice prediction in intermodal transport networks.(Frejinger Lab, Mila)
- Develop CNN models to detect cell types in contrasted cell images. (Cellular Engineering Research Unit, IRIC)

Applied Artificial Intelligence Intern — May 2021 – Sept. 2021
National Bank of Canada — *Montreal, Canada*

- Developed ML models for applications in risk and business analysis and predictions.
- Developed ML solutions to assure mathematical fairness in classification models.
- Co-authored bank-wide explainability and fairness guidelines to assess mathematical model development.

Data Science Intern — Dec. 2020 – August 2021
Bureau des données clinico-administratives, Ministry of Health in Quebec — *Montreal, Canada*

- Used traditional statistical, machine learning and time-series forecasting methods to predict hospitalization and death rates of the sub-regions in Quebec.
- Developed data-driven analysis to help government officials make public health policy decisions throughout the 2020 pandemic.

Computational Physics Researcher — Feb. 2020 – Jan. 2021
Medical Physics Unit, McGill University — *Montreal, Canada*

- Implemented deep learning methods (CNNs) to create software that segments cancer cells from healthy cells and fast radiation dose calculations.
- Analysis of the radiation therapy Monte Carlo simulation software to compare RBE of patient specific cell size distributions and other quantities.

Head Supervisor and Instructor — Summer 2020
Northern Village of Kuujjuaq — *Kuujjuaq, Canada*

- Implementing and instructing lifesaving candidates on the procedures and regulations of the Canadian National lifesaving program.
- Supervise staff, schedule shifts and manage daily tasks.

Scholarships

Natural Sciences and Engineering Research Council — 2021-2023
42,000 $ for 2 year master's degree. — *Canada*

Academic Publications and Projects

Melodic Phrase Segmentation Using Conditional Random Field December 2021

- Being reviewed at Artificial Intelligence in Medicine
- Aim of study is to predict patient-specific outcome after a positive COVID-19 diagnosis using clinical-administrative data. Achieved above 95% AUC and sensitivity scores in the study.
- Link

Predicting Individual COVID-19 Outcomes during Quebec's Second Wave August 2021

- Being reviewed at Artificial Intelligence in Medicine
- Aim of study is to predict patient-specific outcome after a positive COVID-19 diagnosis using clinical-administrative data. Achieved above 95% AUC and sensitivity scores in the study.
- Link

Analysis of the RBE of Particle Radiation Using 3D Models | RI-MUHC June 2020

- A novel cell segmentation method to make predictions of RBE using tissue models containing the same cell and nucleus size distributions as found using computer vision in a patient's histopathological sample and Monte Carlo based simulation using inhouse software.
- Link

Invited and Contributed Talks

Artificial Intelligence and Data Mining Exhibition in Health Research 2021 | November 2021

- Invited to present work done in "Predicting Individual COVID-19 Outcomes during Quebec's Second Wave"

Other

Tutor/Mentor Sep. 2020 – Present

McGill AI & Polytechnique AI *Montreal, Canada*

- Help run tutorials for low-level undergraduate students looking to get into machine learning.

CEGEP Math Tutor Sep. 2017 – Sept. 2020

Dawson College *Montreal, Canada*

- Hold 3 hour office hour to tutor CEGEP math courses (Calculus I, II and Linear Algebra).

Spoken Languages: English (Native), French (Advanced)
Coding Languages: Java, Python, C++, SQLite, R, OCaml, Bash
Libraries: PyTorch, TensorFlow, Keras, Thanos, Scikit-learn, NumPy, SciPy, Pandas
Interests: Current Junior A Hockey, Rock Climbing, Ski Touring, Politics, Machine Learning and Climate