Wisang Sugiarta

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EDUCATION

Ph.D - Computational Physics
University of Colorado, Boulder

2024 – 2028
Boulder, Colorado

- Advisor: Jed Brown (CS)
- Thesis: Nonlinear Modeling, Scientific Computing, Machine Learning and Computational Fluids.

M.Sc - Computer Science
University of Montreal & Mila

2023
Montreal, Canada

- Advisor: Emma Frejinger
- Thesis: Decision-focused learning for multi-commodity stochastic network optimization.

B.Sc - Physics & Computer Science
McGill University

2021
Montreal, Canada

- Thesis: Monte Carlo simulation of high-energy radiation in medical physics.

EXPERIENCE

Research Assistant
University of Colorado

08.2024 –
Boulder, Colorado

- Supervised by Andrew Winters (ATOC). Development of methodology for prediction of chaotic systems, extreme wind events in Colorado's front range using reservoir computing and spatiotemporal data.
- Supervised by Jed Brown (CS). Development of RDycore in shallow water simulations. Project includes contributions to CEED and PETSc.

Quantitative Strategist - Associate
Morgan Stanley

04.2023 – 08.2024
Montreal, Canada

- Completed the Graduate Quantitative Finance Program, required for 1st year Quants learning scientific computing, stochastic calculus and financial mathematics.
- Sat on Quantitative Derivative Strategies - Delta One Desk. Contributed to computational PDE libraries and data science applications in finance.

M.Sc Researcher
MILA and University of Montreal

09.2021 – 05.2023
Montreal, Canada

- Completed thesis research titled: *An exploratory study of decision-focused learning for mutli-commodity network design in transportation.*
- Developed package to solve complex two-stage stochastic problems that can handle MILPs. Applications in power-grid planning and last mile transportation problems.

Scientific Research Intern
Environment Canada

09.2021 – 05.2022
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 multi-grid physics models in hydrodynamic modeling, tidal analysis, and prediction in rivers.

Data Science Intern
Intact Financial - Data Lab

05.2022 – 09.2022
Montreal, Canada

- Research and Methodologies Team
- Research and create prototypes of state-of-the-art ML and statistical techniques for pricing and risk models.
- Analyzed model with backtesting, benchmarking, sensitivity analysis.

Applied Artificial Intelligence Intern
National Bank of Canada

05.2021 – 09.2021
Montreal, Canada

- Developed ML models for applications in risk and business analysis.
- 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
12.2020 – 08.2021

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
02.2020 – 12.2020

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

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

The Canadian Meteorological and Oceanographic Society (CMOS) Congress |
2022

- ∗ Invited to present work done in "A Framework for Estimating River Tides and Estuary Discharges from the SWOT Satellite Mission"
- ∗ Work done as a part of Environment Canada Internship.

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

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

OTHER

Tutor/Mentor
09.2020 – 04.2022

McGill AI & Polytechnique AI   *Montreal, Canada*

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

CEGEP Math Tutor
09.2017 – 09.2020

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 (Native)
Coding Languages: Java, Python, OCaml, Bash, Julia
Interests: Former Junior A Hockey, Rock Climbing, Ski Touring.