

# Kusha Sareen

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*"Experience is merely the name men give to their mistakes."*

## Education

### McGill University (4.0/4.0 cGPA)

Montreal, QC

B.S. IN HONOURS PHYSICS AND COMPUTER SCIENCE

Aug. 2019 - Apr. 2023

- Distinctions: JW McConnell Entrance Scholarship, Faculty of Science Scholarship (x2), McGill Initiative in Computational Medicine Summer Research Scholarship, Dean's Honour List (x2).
- Activities: Co-Lead of the Meditation Club at McGill, Neurotech (Signal Processing), Robotics (AUV Software), AI Society, Trivia, Intramural Basketball.

## Experience

### Armilla AI

Toronto, ON

MACHINE LEARNING RESEARCH AND DEVELOPMENT INTERN

May 2021 - Sept. 2021

- Automated optimal partial dependency plot selection for machine learning explainability platform to better understand the behaviour of large black-box models.
- Worked with a team in sprint cycles to research, implement, productize and test the new feature.

### McGill University – Faculty of Science

Montreal, QC

STUDENT RESEARCHER IN MATHEMATICAL PHYSIOLOGY

Jan. 2020 - May 2021

- Applying nonlinear dynamics and numerical techniques to understand physiological systems in ongoing research characterizing calcium oscillations in oligodendrocytes, a process implicated in neural plasticity and learning.
- Development and analysis of data-driven mathematical models to make predictions and motivate experiment.

### McGill University – Artificial Intelligence Society

Montreal, QC

ACCELERATED MACHINE LEARNING BOOTCAMPEE

Sept. 2019 – Jan. 2020

- Built machine learning projects in natural language processing using Naïve Bayes, in facial recognition using principal component analysis, in image classification using a convolutional neural net and more.

### Western University – Schulich School of Medicine and Dentistry

London, ON

COOPERATIVE EDUCATION IN GENOMICS

Jan. 2019 – Jun. 2019

- Worked with a large genomic dataset to characterize the activity of CK2, a protein kinase implicated in cancer pathways, extracting features linking protein activity to uncover mechanisms of action.

### Western University – Schulich School of Medicine and Dentistry

London, ON

SUMMER RESEARCH VOLUNTEER

Jun. 2018 – Aug. 2018

- Constructed a 3D model of a middle ear ligament implicated in injury-related tinnitus using medical image processing software.
- Programmed professor's online quiz interface.

## Personal Projects

<b>oligo</b>	A Python package that numerically solves a system of ubiquitous coupled PDEs along the edges of an arbitrary graph structure, built for mathematical physiology project.
<b>chestX</b>	A chest X-ray classifier for pneumonia and 13 other thoracic diseases, outperforming the average clinical radiologist with an AUC of 0.769.
<b>scinum</b>	A general purpose Python package for data analysis in experimental physics, handling error estimation and propagation, curve fitting and data presentation.

## Skills & Interests

<b>Computer</b>	Python (numpy, scipy, pandas, tensorflow), C, C++, Java, JavaScript, MATLAB, Haskell, OCaml, Assembly, Unity, SQL, Bash/Git, problem-solving, data processing, 3D modelling, Familiarity with: mathematical modelling and nonlinear dynamics, algorithm design and analysis, machine learning, neural computation, finance and trading.
<b>Language</b>	interpersonal and presentation skills, English, French, Hindi, Punjabi.
<b>Interests</b>	historical fiction; pick-up basketball; classic British sitcoms; trivia; alpine skiing; contest mathematics and computer science.