

# Jasmine (Tig) Moore

BSc PHYSICS · PHD BIOMEDICAL ENGINEERING

☎ (+1) 970 799 5659 | ✉ jasmine.moore@ucalgary.ca | 🏠 <https://www.ucalgary.ca/labs/miplab/home> | 💻 <https://www.linkedin.com/in/tig-moore>

## Summary

Current PhD student in Biomedical Engineering with a focus on developing deep learning algorithms to model the progression of neurodegenerative diseases. Expert in image processing and computer vision research. Skilled in a variety of programming languages and frameworks for model development. Collaborator with clinicians to develop biologically inspired deep learning models. Experienced in developing data analysis and machine learning pipelines for scientific research. Expert in scientific writing and collaborative group management. Continually curious and learning about the intersectional fields of neuroscience and machine intelligence.

## Skills

### Software Development </>

bash, Linux, Git, Java, VTK, ITK, SQL

### Machine Learning 🧠

Python, Tensorflow, Keras, Pytorch, Numpy, Pandas, Seaborn

### Math ∞

calculus, linear algebra, graph theory, statistics

### Technical Communication 🗣️

academic writing, data visualization and analysis, project management, collaborative research, presenting

## Education and Experience

### University of Calgary

Calgary, AB

PHD IN BIOMEDICAL ENGINEERING, MEDICAL IMAGING SPECIALIZATION

Jan. 2020 - Present

- Developed deep learning networks and algorithms that model the cognitive decline seen in patients with neurodegenerative diseases and published multiple journal and conference papers detailing results.
- Experimented with various types of model compression and state-of-the-art pruning techniques.
- Designed toy models to test feasibility of experiments and scaled-up by implementing transfer learning techniques to fine tune deep learning models to specific tasks.
- Used cluster computing services to run computationally heavy jobs in parallel.
- Implemented interpretable quantitative measures to analyze model function.
- Cleaned and analyzed data for clinical research groups using an in-house machine learning pipeline.
- Mentored and assisted students in analyzing data from patients diagnosed with Alzheimer's disease.

### Institute for Computational Neuroscience, University Medical Center Eppendorf-Hamburg

Hamburg, Germany

PHD RESEARCH EXCHANGE

June - July, 2022

- Collaborated with researchers in a computational neuroscience lab to develop algorithms for deep learning models that may be more biologically plausible.
- Implemented and designed an algorithm which incorporates neuroplasticity into a neurodegenerative pruning regime in brain-like deep learning models to more accurately capture the nature of neural processing in diseased (e.g. Alzheimer's, posterior cortical atrophy) patients.
- Communicated progress and research to colleagues both in Germany and Canada.
- Synthesized findings into a conference paper that was presented at NeurIPS 2022.

### University of British Columbia

Kelowna, BC

BSc IN PHYSICS

2012-2016

- Built and experimented with a split-ring resonator in an Advanced Physics lab to analyze metamaterial properties such as negative permeability.
- Designed and constructed coaxial cables to study dynamic voltage characteristics.
- Taught labs (TA) for Newtonian physics and introductory electromagnetism. Graded lab assignments and assisted students in writing formal lab reports.
- Tutored as a Supplementary Learning Leader for math and physics students. Provided students with extra help studying and practicing fundamental principles.

## Publications

### JOURNAL ARTICLES

#### Dementia in Convolutional Neural Networks: Using Deep Learning Models to Simulate Neurodegeneration of the Visual System.

Springer Neuroinformatics

JASMINE A. MOORE, ANUP TULADHAR, ZAHINOOR ISMAIL, PAULINE MOUCHES, MATTHIAS WILMS, NILS D. FORKERT

2022

- 🔗 <https://doi.org/10.1007/s12021-022-09602-6>

## Modeling neurodegeneration in silico with deep learning

ANUP TULADHAR, JASMINE A. MOORE, ZAHINOOR ISMAIL, NILS D. FORKERT

- <https://doi.org/10.3389/fninf.2021.748370>

Frontiers in Neuroinformatics

2021

## Supervised machine learning tools: A tutorial for clinicians

Co-AUTHOR

- <https://doi.org/10.1088/1741-2552/abbff2>

Journal of Neural Engineering

2020

## CONFERENCE PAPERS

### Adding neuroplasticity to a CNN-based in silico model of neurodegeneration.

New Orleans, LA

JASMINE A. MOORE, MATTHIAS WILMS, KAYSON FAKHAR, FATEMEH HADAEGHI, CLAUS HILGETAG, NILS D. FORKERT

2022

- Shared Visual Representations of Humans and Machines, NeurIPS

### Simulating neurodegeneration with noise in convolutional neural networks.

Cold Spring Harbor, NY

JASMINE A. MOORE, ANUP TULADHAR, NILS D. FORKERT

2022

- From Neuroscience to Artificially Intelligent Systems (NaiSys)

### Changes in representational structure within a degenerating neural network

Cold Spring Harbor, NY

ANUP TULADHAR, JASMINE A. MOORE, NILS D. FORKERT

2022

- From Neuroscience to Artificially Intelligent Systems (NaiSys)

### Simulating neurodegeneration by applying noise and synaptic ablation to convolutional neural networks

Calgary, AB

JASMINE A. MOORE, ANUP TULADHAR, NILS D. FORKERT

2022

- Women in Data Science Symposium

### Simulating progressive neurodegeneration in silico with deep learning

Toronto, ON

ANUP TULADHAR, JASMINE A. MOORE, NILS D. FORKERT

2022

- CogSci, Cognitive Science Society

### Modeling progressive neurodegeneration with deep convolutional neural networks

Virtual Conference

JASMINE A. MOORE, ANUP TULADHAR, NILS D. FORKERT

2021

- Shared Visual Representations of Humans and Machines, NeurIPS

### Modeling progressive neurodegeneration with deep convolutional neural networks

Virtual Conference

ANUP TULADHAR, JASMINE A. MOORE, NILS D. FORKERT

2021

- 27th Annual Meeting of the Organization for Human Brain Mapping

### Deep convolutional models as in silico models for neurodegeneration

Virtual Conference

JASMINE A. MOORE, NILS D. FORKERT

2021

- Women in Data Science Symposium

## Honors & Awards

2022 **2nd Place**, Best Poster Award, Women in Data Science Symposium

Calgary, AB

2021 **Recipient**, Biomedical Engineering Academic Excellence Award

Calgary, AB

2020 **Recipient**, Alberta Innovates - Data Enabled Innovation Scholarship

Calgary, AB

2020 **Recipient**, Hotchkiss Brain Institute - Brain CREATE NSCERC Scholarship

Calgary, AB

2020 **Recipient**, Jayasree Ramachandran Graduate Scholarship in Computational Neuroscience

Calgary, AB

## Activities

### NeurIPS

New Orleans, LA

REVIEWER

2022

- Provided reviews for multiple paper submissions to the Shared Visual Representations for Humans and Machines (SVRHM) workshop planned for the NeurIPS conference.

### AI Week by Alberta Machine Intelligence Institute (AMII)

Edmonton, AB

PARTICIPANT

2022

- Attended keynote talks given by industry and research leaders.
- Awarded AI Week talent bursary
- Networked with commercial industry and research industry professionals.

## Kickstart Program by AMII

*Virtual*

PARTICIPANT

*June - July 2022*

- Attended programming provided for women and gender-diverse individuals who are interested in pursuing careers in data science and AI.
- Networked with a diverse cohort of peers with similar lived experiences and STEM-related interests.