



Athabasca University

Research Introduction

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Research fields



- AI and machine learning
- Deep learning, natural language understanding, pattern recognition
- AI and machine learning based solutions for education, business, science, industry, medicine and healthcare (e.g., Health Everywhere – Alberta Major Innovation Fund)

Research focuses



- New deep learning models for *representing, recognizing, generating, and reasoning* about sequential and structured data

- AI and machine learning for medicine and healthcare:

Application scenarios in medicine (regarding medical imaging, ECG, brain EEG, medical records, and other health data) for identifying signals, detecting issues, producing alerts and facilitating communications and interoperability

Research approaches



- Exploring fundamental, state-of-the-art, and open AI and machine learning problems, methods, models and algorithms
- Studying the mechanisms and optimization of deep representation and learning
- Capturing the semantics, structures, and relations in data
- Learning with and reasoning about textual, signal, sequential, image, and multi-modal data

Research outcomes



- Solving computational, mathematical, and scientific problems arising from deep learning models, algorithms, and solutions
- Developing AI, machine learning and deep learning methods and solutions for problems from any domains of our interest, as long as they produce, possess, and use data in the process for yielding meaningful outcomes

What to gain



- Grasping AI and machine learning
- Enhancing research capability
- Achieving meaningful research outcomes in AI, machine learning and their applications
- Facilitating an application domain of your interest, including but not limited to medicine and healthcare.

Who can do



- Curious about why and how AI and machine learning work
- Interested in exploring the mechanisms of the state-of-the-art deep learning models and algorithms
- Passion for advancing AI and machine learning (models, algorithms, solutions)
- Like to practice computational, mathematical and/or scientific thinking
- Eager to solve a specific problem in or with AI and machine learning for your Master's Thesis or Project

Funding opportunities



- Alberta Major Innovation Fund (MIF) – Health Everywhere:

Developing AI and machine learning methods for solving healthcare and medicine related problems with data (e.g., sequential data, images and languages) from different sources.

Collaborators



- SCIS and FST professors and researchers at AU
- External researchers of the MIF project (University of Calgary)
- Our supervised graduate students

--> Calling for graduate students who are interested in exploring and advancing their AI and machine learning capability in processing and understanding medical and scientific data

If you are interested to join



- Check [my website](#) for more information on research topics, activities, and outcomes
- [Email me](#) about your interest and potential research proposal
- Take AI related courses, e.g., [COMP 657](#) (AI), [COMP 659](#) (NLP), COMP 692/3 (with suitable AI/ML topics), and work with me or my collaborators on your Master's Thesis/Project/Essay

Thanks & Welcome

Any questions? Please Contact Dr. Dunwei Wen at
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