Flemming Kondrup

flemming.kondrup@mail.mcgill.ca Google Scholar

RESEARCH INTERESTS

- Improving how intelligent agents learn and make decisions in complex environments, especially when those environments involve many possible actions and sparse rewards.
- Leverage LLMs to enhance the capability of agents in interacting with complex textual and visual environments.
- Applying AI to support healthcare workers and patients in their decision making to promote safety, robustness in uncertain contexts, and efficiency in data-constrained environments.

EDUCATION

PhD in Quantitative Life Science, Mila & McGill University, 4.00/4.00 *2022-current*
Supervision: Dr. Doina Precup & Dr. Lars Grant

Bachelor of Science, McGill University, 3.77/4.00 *2018-2022*
First-Class Honours Distinction in Biological, Biomedical and Life Science Program

NOTABLE COURSEWORK

McGill: Applied Machine Learning (COMP551, 4.0/4.0), Data Science (COMP598, 4.0/4.0), Reinforcement Learning (COMP579, 4.0/4.0), Foundations of Quantitative Life Sciences (QLSC600, 4.0/4.0), AI in Medicine (EXSU500, *in progress*)

Mila: Representation Learning (IFT6135, 4.0/4.0), Towards AGI: Scaling, Alignment and Emergent Behaviors (IFT6760A, *audited*)

EXPERIENCE

Research Intern *May – August 2021*
McGill University Health Center (supervisor: Peter Metrakos)
- Immune cell data analysis for discovery of immunotherapy targets in liver cancer

Research Intern *Feb – May 2021*
McGill University, Dept. of Biomedical Engineering (supervisor: David Junker)
- Nanotechnological isolation of circulating tumor cells and identification of biomarkers

Research Intern *Feb – May 2021*
McGill University, Dept. of Anatomical Sciences (supervisor: Gabriel Venne)
- Investigation of the role of deep fascia in chronic pain

Research Intern *Sept 2020 – April 2021*
McGill University Health Center (supervisor: Peter Metrakos)
- Immunohistochemical characterization of Hepatocellular Carcinoma

Research Intern *June – August 2019*
Technical University of Denmark (supervisor: Alireza Dolatshahi-Pirouz)
- Development of a human gut-on-chip for drug delivery and disease modelling

AWARDS

Fonds de Recherche du Québec (FR)	$40,000 CAD
Winner of the 2021 ProjectX Aritificial Intelligence Competition – Clinical Practice Cohort	$25,000 CAD
McGill Quantitative Life Science Stipend Award	$21,000 CAD
Recipient of the Schull-Yang International Experience Award Scholarship	$7,000 CAD

1st place, McGill Quantitative Life Science 3MT Summer Competition 2023-24

1st place, McGill Quantitative Life Science 3MT Winter Competition 2023-24

1st place, McGill Quantitative Life Science 3MT Fall Competition 2023-24

Recipient of the Dean's Multidisciplinary Undergraduate Research List Distinction

PUBLICATIONS

Journal Publications

Transferrable Model-Based Reinforcement Learning for Personalized Insulin Therapy
Flemming Kondrup*, *S. Basu**, *D. Precup* *Submitted*

The Deep Fascia and its Role in Chronic Pain and Pathological Conditions
Flemming Kondrup, *Nathaly Gaudreault, Gabriel Venne* *Clinical Anatomy*

Characterizing the interplay between angiogenic and immunoreactive factors of Hepatocellular Carcinoma
*A Kapelanski-Lamoureux, A Lazaris, **Flemming Kondrup**, T Mayer, S K Petrillo, L Krzywon, P Metrakos* *Submitted*

Conference Publications

Towards Safe Mechanical Ventilation Treatment Using Deep Offline Reinforcement Learning
Flemming Kondrup*, T. Jiralerspong*, E. Lau*, N. de Lara, J. Shkrob, M.D. Tran, D. Precup, S. Basu* *AAAI 2023*

Conference Abstracts

Forecaster: Towards Temporally Abstract Tree-Search Planning from Pixels
Flemming Kondrup*, T. Jiralerspong*, D. Precup, K. Khetarpal* *NeurIPS 2023*

Deep Conservative Reinforcement Learning for Personalization of Mechanical Ventilation Treatment
***Flemming Kondrup**, T. Jiralerspong, E. Lau, N. de Lara, J. Shkrob, M.D. Tran, D. Precup, S. Basu* *RLDM 2022*

The implication of Deep Fascia in chronic pain and common MSK-related pathological conditions
***Flemming Kondrup**, Nathaly Gaudreault, Gabriel Venne* *Fascia Research Congress 2022*

Characterizing the Interplay between Angiogenic and Immunoactive Factors of Hepatocellular Carcinoma
*A. Kapelanski-Lamoureux, **Flemming Kondrup**, L. Krzywon, S. Petrillo, A. Lazaris, P. Metrakos* *Canadian Liver Meeting 2022*

Personalizing Mechanical Ventilation using Deep Conservative Reinforcement Learning
***Flemming Kondrup**, Elaine Lau, Thomas Jiralerspong, Jacob Shkrob, My Duc Tran, Nathan de Lara, Sumana Basu* *UofT A.I. Conference 2022*

Hepatitis as a predictor of CD4+ Cell Infiltration in Hepatocellular Carcinoma tumors
***Flemming Kondrup**, Audrey Kapelanski-Lamoureux, Stephanie Petrillo, Anthoula Lazaris, Peter Metrakos* *MUHC Cancer Research 2022*

Characterizing the Interplay between Angiogenic and Immunoactive Factors of Hepatocellular Carcinoma
*A. Kapelanski-Lamoureux, **Flemming Kondrup**, S. Petrillo, T. Mayer, A. Lazaris, P. Metrakos* *Canadian Liver Meeting 2021*

LEADERSHIP & VOLUNTEERING

***Executive Director* of the McGill Student Emergency Response Team (MSERT)** *March 2023 – April 2024*
- Supervised an emergency response team comprising 70+ members, including leading a 7-member executive board.
- Managed an annual budget of $100,000+ CAD for accessible emergency medical aid and education on campus.
- Served as the primary liaison between the service, the McGill administration, and various governmental agencies.

***Training Coordinator* of the McGill Student Emergency Response Team (MSERT)** *March 2022 – April 2023*
- Developed and implemented training programs and member evaluations for a 70+ member emergency response team.
- Led mentoring and teaching initiatives for new recruits and ensured compliance with regulatory training standards.
- Evaluated training effectiveness and provided feedback for continuous improvement.

***Emergency Medical Responder* of the McGill Student Emergency Response Team (MSERT)** *Sept. 2019 – current*
- Provided immediate medical care in emergency situations.
- Accumulated over 2000 hours of dedicated service.
- Shift Lead distinction since March 2020, overseeing team operations during shifts.

***Team Lead* of the McGill Team in the 2021 ProjectX AI Competition** *Sept 2021 – Feb 2022*
- Led a 6-member team against 20+ teams from top institutions across North America.
- Leveraged team strengths to overcome technical and resource-related challenges.
- Achieved first place in the ProjectX AI Competition with a $25,000 award.

INVITED TALKS & MEDIA

"Six McGill undergrads win UofT international artificial intelligence competition" The McGill Tribune

"Applying Reinforcement Learning to improve Healthcare" McGill AI Club Learnathon 2022

"Undergrad team uses machine learning to create a better hospital ventilator" McGill Reporter

"The implication of the Deep Fascia in Chronic Pain and Pathological Conditions" University of Padova

"Stratification of Immune Responses in Hepatocellular Carcinoma" Research of the Faculty of Science of McGill 2021

LANGUAGES

French (Fluent) English (Fluent) Danish (Intermediate) Spanish (Intermediate)