



Montreal, July 4-8

DLMI2022

Summer School on
Deep Learning for Medical Imaging
3rd edition



Welcome message

The Organizers and Sponsors welcome you to the third edition of the Summer School on Deep Learning for Medical Imaging (DLMI)

We hope you will enjoy the event and your stay in Montreal

Sponsors:



Centre hospitalier
universitaire
de Sherbrooke



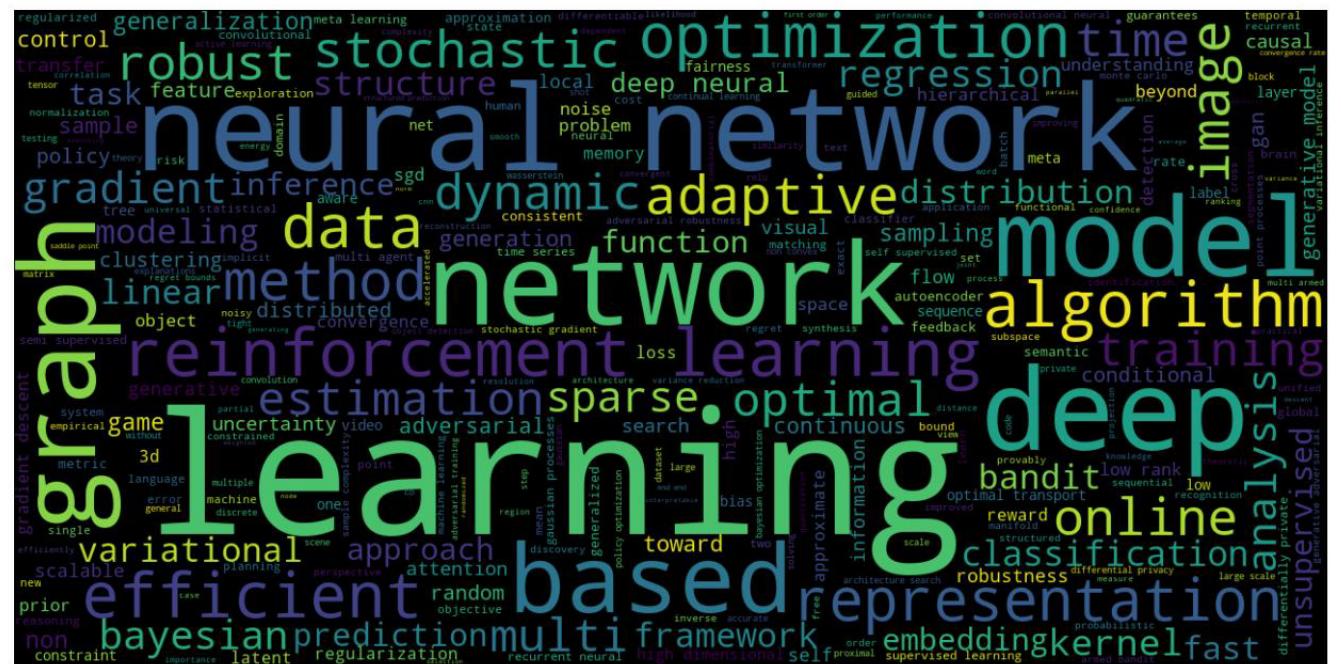
Université de
Sherbrooke



Introduction

Why the Summer School ?

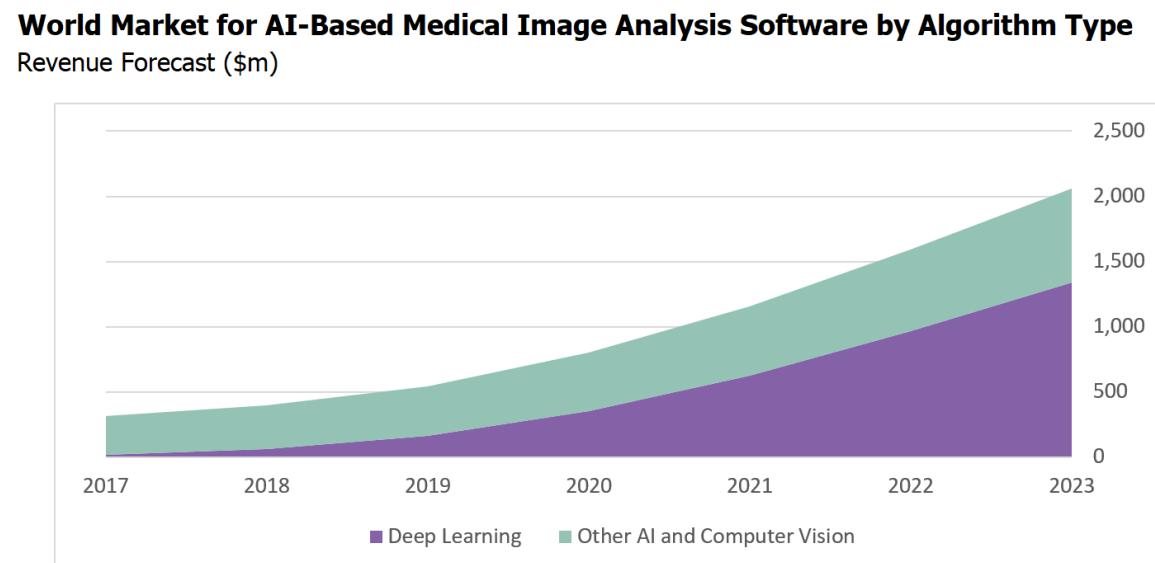
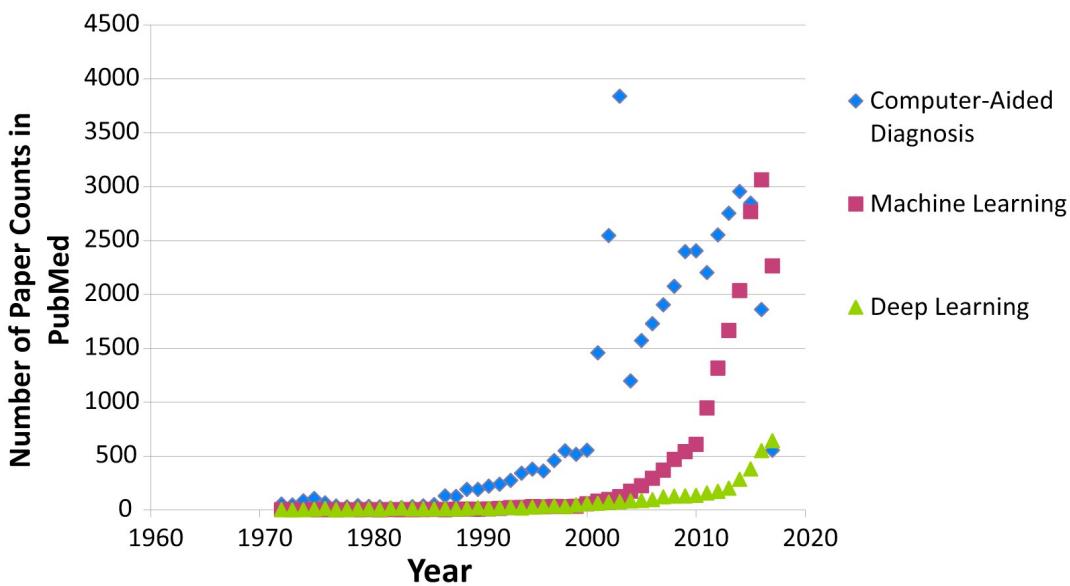
- The AI field is becoming more and more complex
- How to navigate in this jungle ?



Introduction

Why the Summer School ?

- AI and deep learning have become an essential part of medical imaging



Source: Signify Research

Jul-18



Introduction

What will I learn ?

Introduction to machine learning:

- Basics of machine learning, classification vs regression, train and test sets, metrics, over and under fitting, etc.

Basics of deep learning:

- **Part I:** Multi-layer perceptron, gradient descent, logistic regression, activation function, regularization, etc.
- **Part II:** Weights initialization, backward propagation, batch size, convolution neural nets (CNN), pooling, etc.



Pierre-Marc Jodoin



Christian Desrosiers



Introduction

What will I learn ?

Advanced concepts in deep learning 1:

- Common deep learning architectures for classification, localization and segmentation, etc.



Michaël Sdika

Advanced concepts in deep learning 2:

- Explainability, RNN, LSTM, Transformers, Self-supervised learning, AI-powered ultrasound, etc.



Hassan Rivaz



Introduction

What will I learn ?

Key topics in medical imaging:

1. Generative and adversarial methods for medical imaging
2. Typical medical imaging issues
3. Is my model interpretable, explainable, valid and useful?
4. Weakly supervised deep learning
5. Geometric deep learning



Mohammad Havaei



Samuel Kadoury



Ryeyan Taseen



Ismail Ben Ayed



Jose Dolz



Hervé Lombaert



Introduction

How to apply these concepts ?

Four hands-on tutorials:

1. Classification from machine learning to deep learning
2. Segmentation using deep learning
3. Variational Autoencoder
4. Weakly supervised deep learning



SaturnCloud



TensorFlow



Introduction

Having fun is also important...

Cocktail reception (tonight 17h30, ÉTS building E)



Bring your drink coupons



Introduction

Having fun is also important...

Banquet dinner at the Chateau Ramezay Museum (Wednesday, 18h)

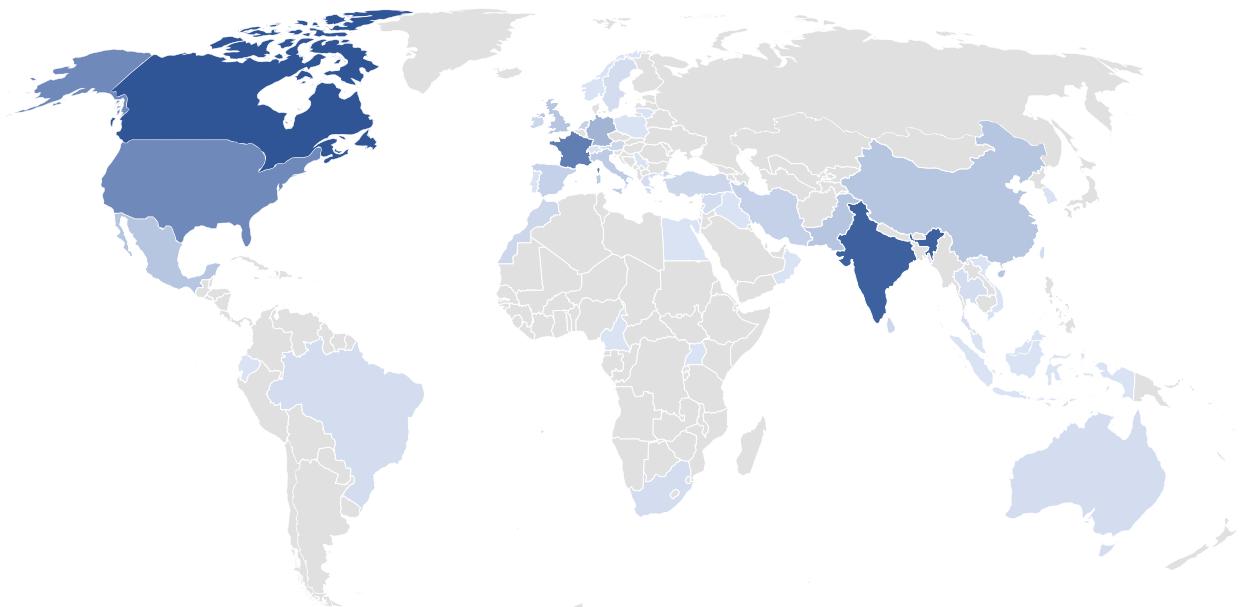


Bring your drink coupons

Introduction

Who is attending the Summer School ?

Participants by country



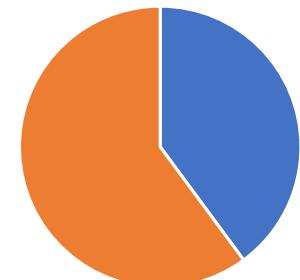
Count
25
1

Student



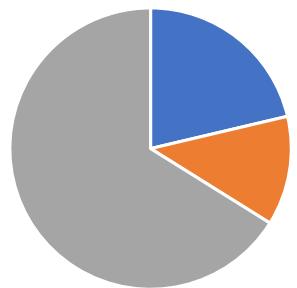
■ Yes ■ No

AI Skills



■ No ■ Yes

Experience



■ Life Science ■ Other ■ Computer Science



Practical information

Campus map



Salle Vidéotron (2nd floor)
Tonight's cocktail

Auditorium (here)
Talks, coffee breaks (outside)

Cafetaria (ground floor)
Lunch

Computer labs (3rd floor)
Hands-on tutorials



Practical information

Wi-Fi anywhere on campus

Network: **ETS-Invites**

Login: **wifi-even@etsmtl.ca**

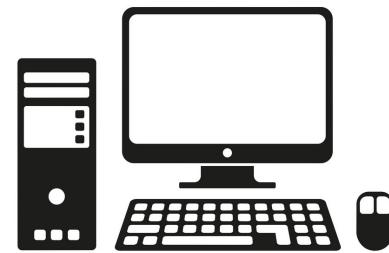
Password: **Eve-2020**



No laptop ? No problem !

Use the same login on any PC in the labs

See booklet for more information



Practical information

Hands-on sessions

Held simultaneously in two different computer labs:

Sessions 1, 3, 4 : Rooms A-3446 and A-3450

Session 2 : Rooms A-3412 and A-3344

Take elevator to 3rd floor of this building and follow signs

You can go to any of the two rooms, we will then assign you to a desk based on available space



Practical information

Hands-on material

Documents and videos can be found here:

URL : <https://info.usherbrooke.ca/pmjodoin/dlmi2022/handson>

Login : **dlmi2022**

Password : **dlmi2022**

Before hands-on:

- Create a Saturn account (*see web page*)
- Review the material



Practical information

Breakfast and coffee breaks outside the auditorium

- Light breakfast between 8h30 and 9h00
- Coffee breaks at 10h and 15h



Lunch at the ÉTS cafeteria

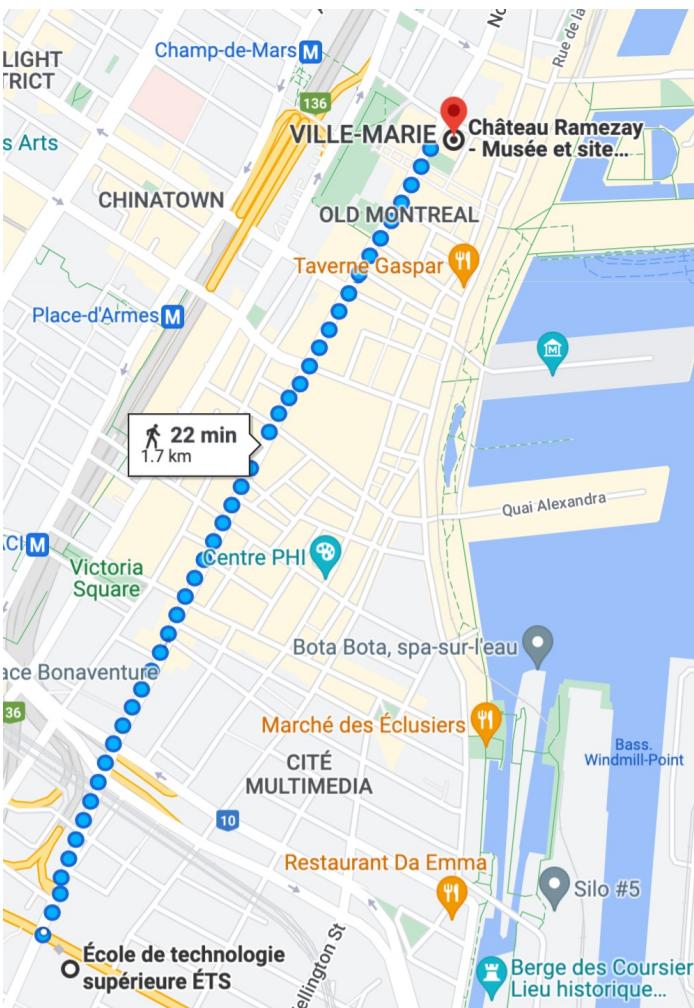
- Usually between 12h30 and 14h
- Bring your meal coupons (one per day)



Practical information

**Going to the baquet dinner
on Wednesday**

See map in the booklet:



A walking group will leave from the main entrance of this building at **17h30**

Feel free to join !



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DLM12022

Thanks for listening

Have a great time !