Montreal, July 8–12

DLMI2024

Summer School on Deep Learning for Medical Imaging

5th edition

ÉTS Le génie pour l'industrie

CHUS Centre hospitalier universitaire de Sherbrooke

UdS Université de Sherbrooke

Centre d'imagerie moléculaire de Sherbrooke (CIMS)

DIAGNOS medical systems

LABEX PRIMES UNIVERSITÉ DE LYON

Google

INSA VALOR

Big thanks to….

Local and international organizing committee

Volunteers

Big thanks to….

Local and international organizing committee

Volunteers

Speakers

Christian Desrosiers

Jose Dolz

Nicolas Thome

Mohammad Havaei

Pierre-Marc Jodoin

Mohammad Shateri

Eric Kerfoot

Big thanks to….

Local and international organizing committee

Volunteers

Speakers

Big big big thank you to Thomas Grenier (CREATIS - Lyon)

Big thanks to….

Local and international organizing committee

Volunteers

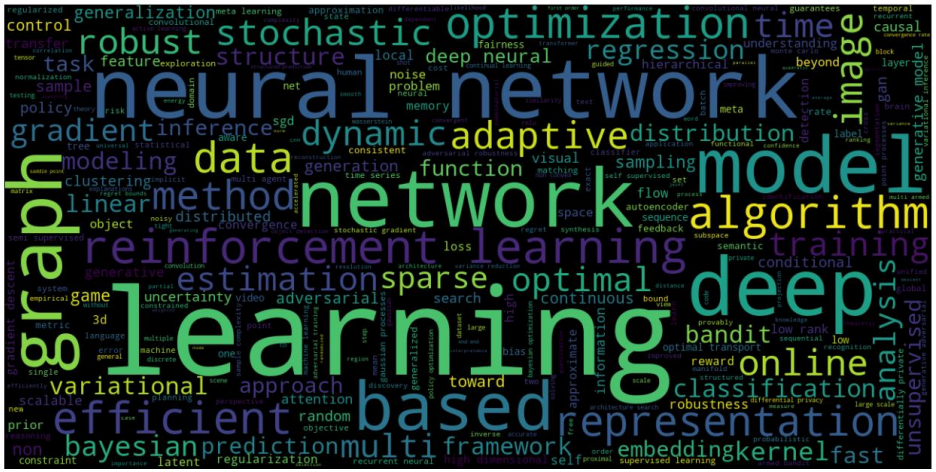
Speakers

Attendees

Recap Introduction from Welcome message

Why the Summer School ?

- The AI field is becoming more and more complex
- How to navigate in this jungle ?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beyond
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differential privacy
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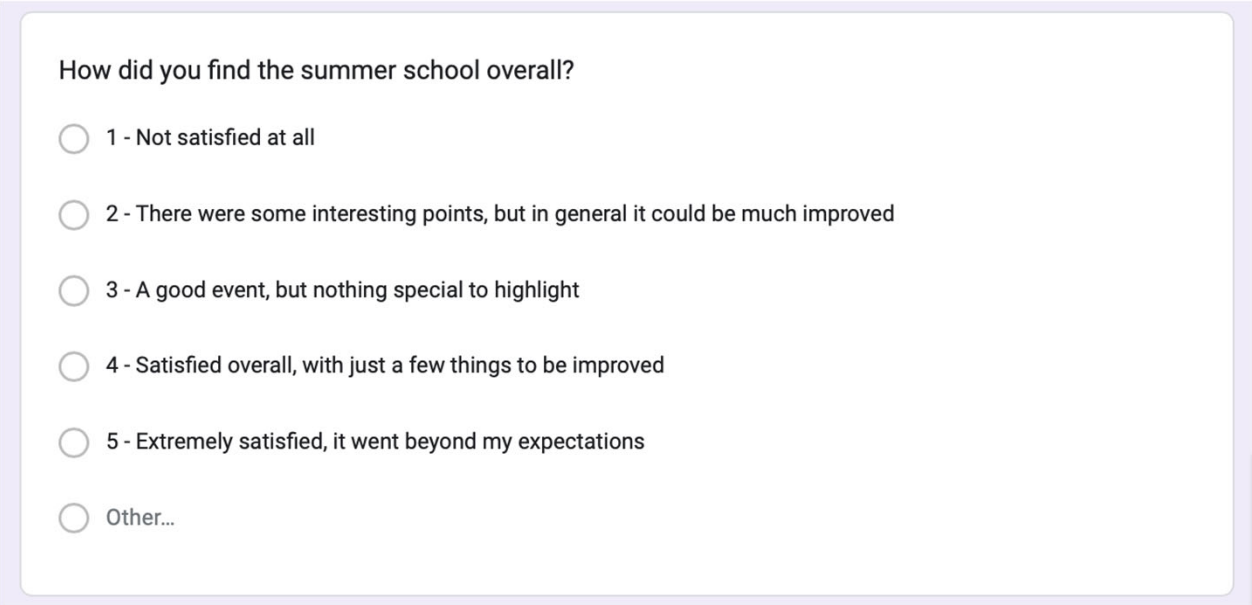
structures
search

How much did you like the Summer School?

We will send a survey to complete

- Sent by email
- 1-2 weeks to fill
- It is anonymous!


How did you find the summer school overall?

- 1 - Not satisfied at all
- 2 - There were some interesting points, but in general it could be much improved
- 3 - A good event, but nothing special to highlight
- 4 - Satisfied overall, with just a few things to be improved
- 5 - Extremely satisfied, it went beyond my expectations
- Other...

Practical information

Oral presentations and hands on material

Pdfs and videos can be found here:

URL : https://jodoin.github.io/dlmi2024/

Password : **dlmi2024**

Upcoming technical support

July 16 : 10:00 Montreal time

hands on 1

July 17 : 10:00 Montreal time

hands on 2

July 18 : 10:00 Montreal time

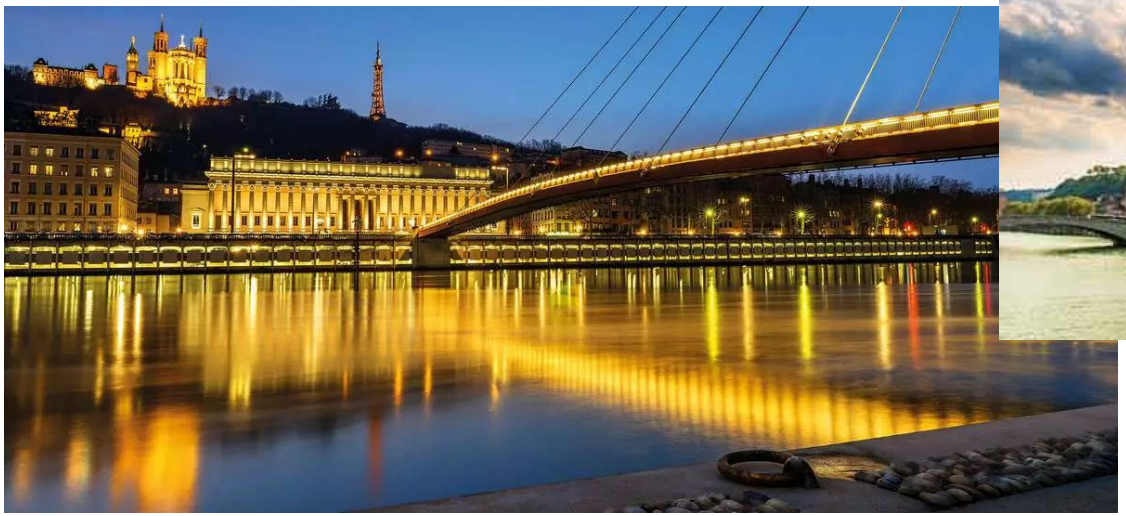
hands on 3

July 19 : 10:00 Montreal time

hands on 4

Summer School DLMI 2025

We travel back to Lyon (France)



More information to come

Montreal, July 8–12

DLMI2024

Thanks for attending!

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DIAGNOS medical systems

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Welcome message

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

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

Gold Sponsors

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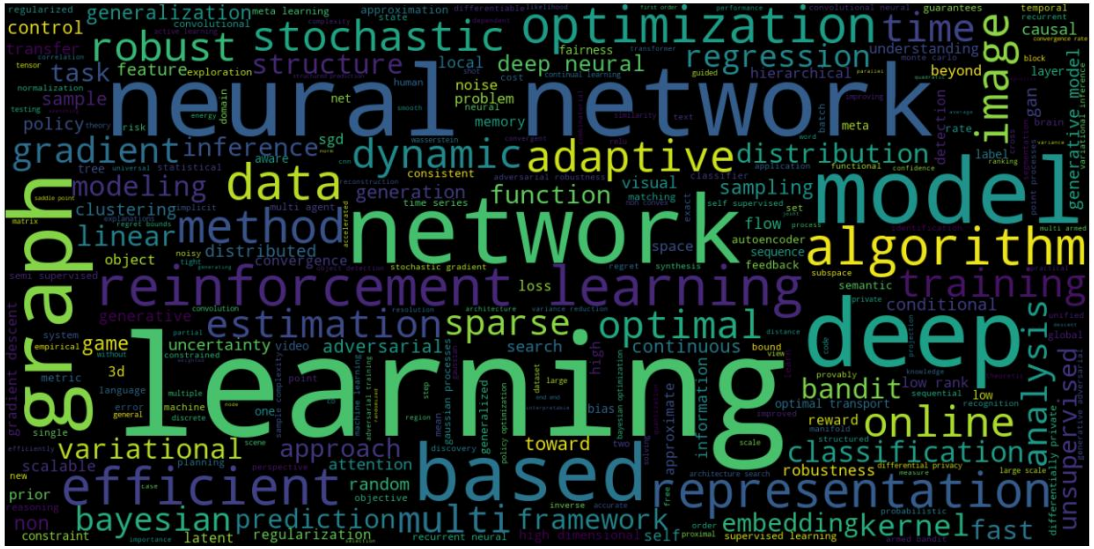
Bronze Sponsors

Centre d'imagerie moléculaire de Sherbrooke (CIMS)

Introduction

Why the Summer School ?

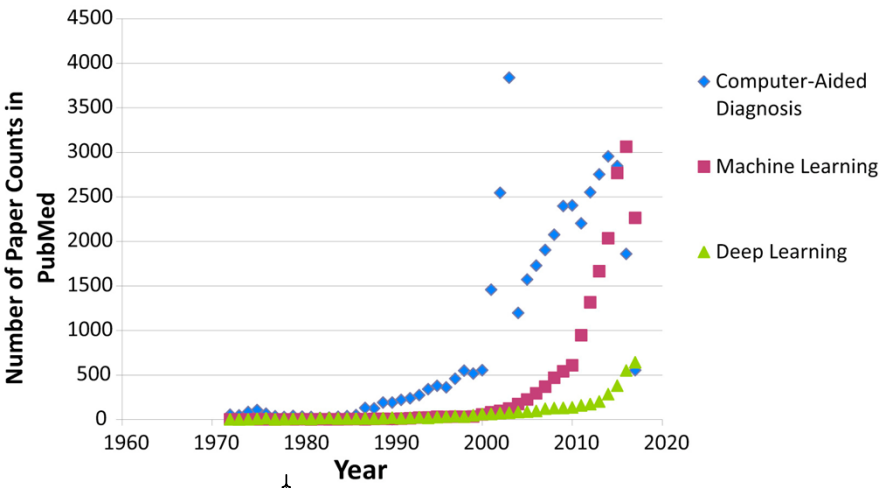
- The AI field is becoming more and more complex
- How to navigate in this jungle ?

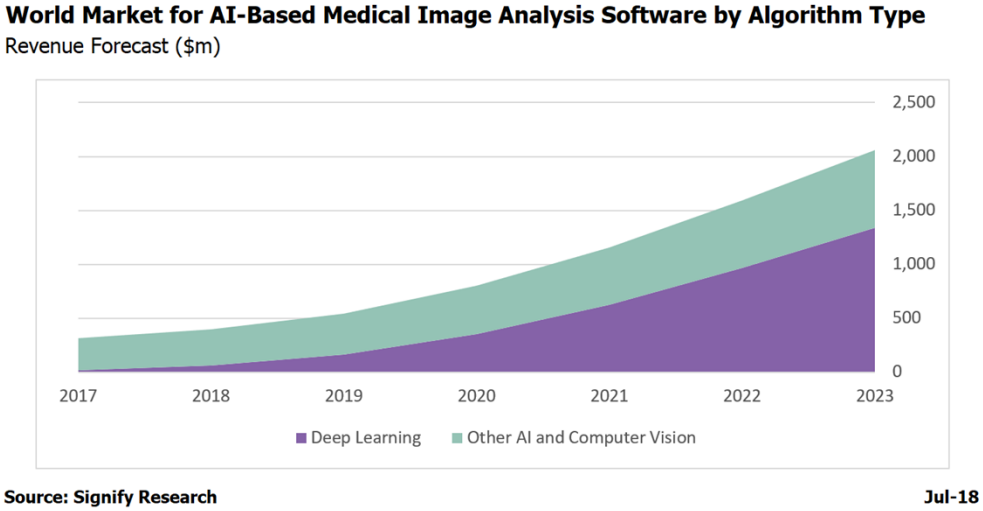


Introduction

Why the Summer School ?

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





Introduction

What will I learn ?

Basics of deep learning:

- **Parts 1-2**: Perceptron and MLP, stochastic gradient descent, learning rate, logistic regression, activation function, regularization (L1/L2/dropout/early stopping), etc.
- **Part 3**: 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:

- Recurrent neural networks (RNNs), Attention, Transformers, ViT, etc.

Nicolas Thome

Advanced concepts in deep learning 2:

- Foundation models, language-image pre-training, parameter efficient fine-tuning, prompt learning.

Jose Dolz

Introduction

What will I learn ?

Key topics in medical imaging:

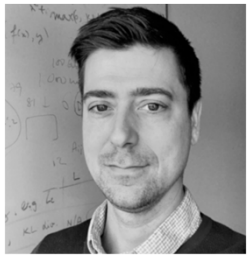
1. CNN architectures and applications
2. Generative and adversarial methods
3. Uncertainty and explainability
4. Typical medical imaging issues
5. Semi and weakly supervised deep learning
6. Open source frameworks (MONAI)

Michaël Sdika

Mohammadhadi Shateri

Mohammad Havaei

Jose Dolz


Christian Desrosiers

Eric Kerfoot

Introduction

What will I learn ?

Round table:

- What are the challenges for AI to break into clinic?

Moderator

Rola Harmouche

Panelists

Sylvain Bouix

Laurent Létourneau-Guillon

Nicolas Thome

Hadi Chakor

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. Foundation models

PyTorch

SaturnCloud

TensorFlow

Introduction

Meeting other participants

Poster session:

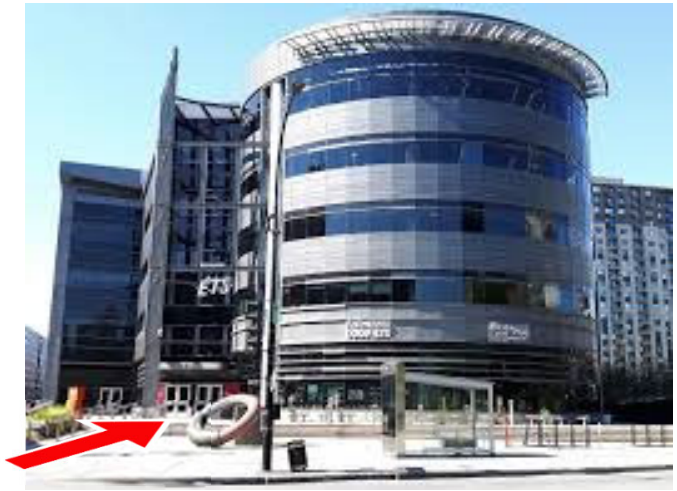
Tuesday 16h30 - 18h00, Outside this auditorium

Setup your poster early on *ANY* available stand

Introduction

Having fun is also important…

Cocktail reception: Tonight 17h30, ÉTS Pub located in ÉTS building B – ground floor



Bring your drink coupons

Introduction

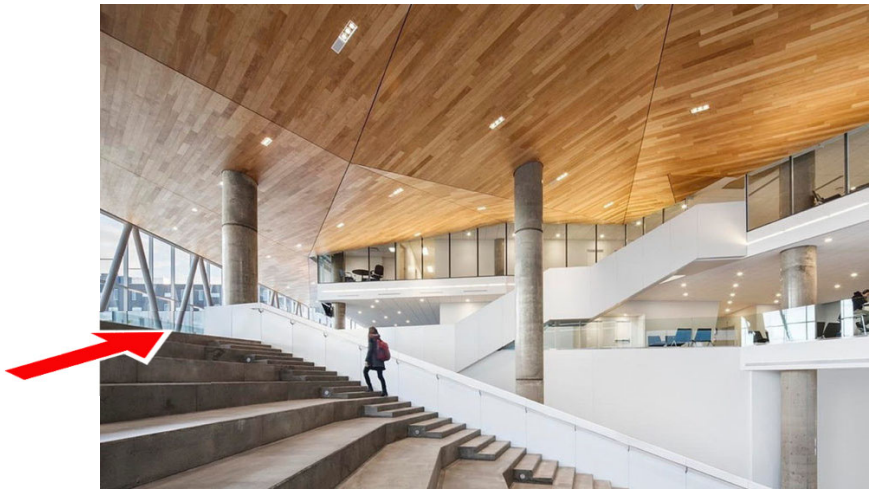
Having fun is also important…

Social Event: Wednesday 18h00, Notre-Dame Basilica (Old Montreal)

Introduction

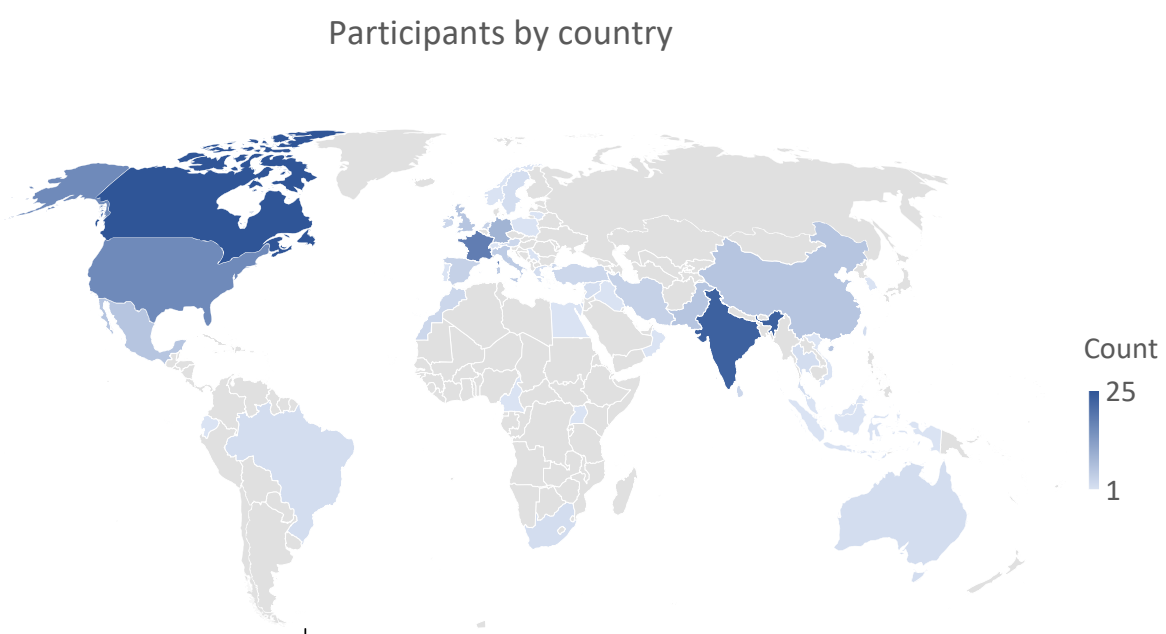
Having fun is also important…

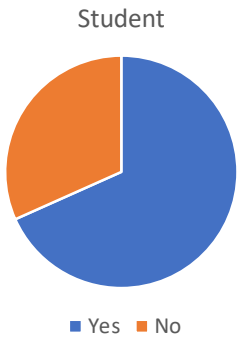
Banquet dinner: Thursday 18h00, ÉTS building E (*turn right at top of stairs*)

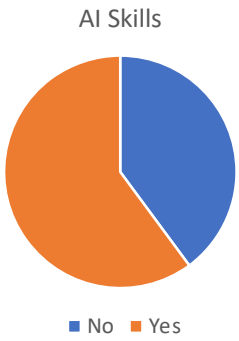


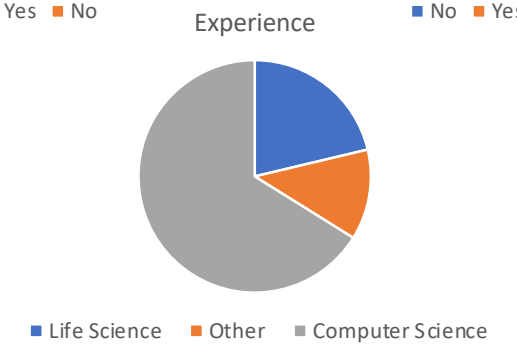
Introduction

Who is attending the Summer School ?









Practical information

Campus map

ÉTS Pub (1st floor)
Tonight's Cocktail

Computer labs (1st floor)
Hands-on tutorials

Salle Vidéotron (2nd floor)
Thursday's Banquet dinner

Computer labs (4th floor)
Hands-on tutorials

Auditorium (here)
Talks, coffee breaks, posters (outside)

Cafetaria (ground floor)
Lunch

Computer labs (3rd floor)
Hands-on tutorials

Practical information

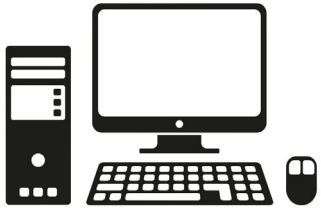
Wi-Fi anywhere on campus

Network: **ETS-Invites**
Login: **wifi-even@etsmtl.ca**
Password: **Eve-2020**

No laptop ? No problem !

Use the <u>same login</u> 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, 4	:	Rooms A-3220 and A-3230
Session 2	:	Rooms E-4021 and E-4022
Session 3	:	Rooms E-4021 and B-2210

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

Follow signs to find rooms

Practical information

Hands-on material

Documents and videos can be found here:

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Password : **dlmi2024**

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 10h30 and 15h

Lunch at the ÉTS cafeteria

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

Practical information

Going to the social event on Wednesday

(*Notre-Dame basilica*)

See map in the booklet:

A walking group will leave from the main entrance of this building at **17h15**

Feel free to join !

Montreal, July 8–12

DLMI2024

Thanks for listening

Have a great time !