Machine & Deep Learning workshop :

Tuesday november 21th

9.00 - 10.00
Welcome and general introduction of the workshop
Tour de table

10.00 - 12.30 (Volker Baecker - with 1 break)
Introduction: Machine Learning and Image Analysis, Features and scale-space

12.30 - 13.30 lunch

13.30 - 15.30 (Volker Baecker)

- Clustering - unsupervised learning
- Ilastik (random forest)

15.30 - 17.30 (Cédric Hassen-Khodja)

Introduction to Supervised Machine Learning (SVM & RF)

Wednesday november 22th

9.00 - 12:30 (Cédric Hassen Khodja- with 1 break)

- Application avec CellProfiler + CellProfiler Analyst
- Application avec Qupath pour faire de la classification d'objets

12-30 - 13.30 lunch

13.30 - **15.30** (Clément Benedetti - with 1 break)
Introduction du python programming

15.30 - **17.30** (JB Fiche)
General introduction to Deep learning :

- Main concepts (neurons, activation function, loss, etc.)
- Building a very simple network for classifying numerical data with Keras

Thursday november 23th

9.00 - 12.30 (JB Fiche- with 1 break)

(3h) Introduction to convolutional networks (JB Fiche)

- convolutional network for image classification (example with MNIST)
- application to an image classification problem and introduction to overfitting issues and transfer learning
- Introduction to fully convolutional network with Unet and application for 2D segmentation of bacteria.

(1h) Available tools for DL

- ZeroCostDL4Mic and practical application for 2D segmentation of nuclei using StarDist

12-30 - 13.30 lunch

13.30 - 15.00
(1h30) Introduction to Cellpose segmentation (2D) for nuclei segmentation and example of retraining

15.00 - 17.30
Open discussion, driven by examples form the participants (bring 1 slide describing your system)