In recent years, methods based on Deep Convolutional Neural Networks (DCNNs) have shown impressive performance improvements for object detection and recognition problems. This has been made possible due to the availability of large annotated datasets, a better understanding of the non-linear mapping between input images and class labels as well as the affordability of GPUs. In this workshop, we will give an overview of various deep learning-based models and approaches relevant to automated analysis in MSEE research. While some of the fundamentals background into DCNNs will be introduced, the emphasis of this workshop will be on the application of these tools to MSEE relevant problems.

**TOPICS:**
- Basic background into DNNs
- Object detection
- Segmentation
- Classification
- Introduction to generative AI

**DAY 1**
Lecture 1: Introduction to DCNNs  
Lecture 2: Object detection  
Lecture 3: Object segmentation

**DAY 2**
Lecture 4: Generative AI  
Lecture 5: Image restoration  
Lecture 6: Latest applications in AI