**Deep Learning for Computer Vision**

**(duration – 2 days )**

1. **Introduction to image processing and computer vision**

**You will learn about**

* The purpose of computer vision, digital images, and operations that is applied, like brightness and contrast correction, convolution and linear filtering.
* The simple image processing methods solve as building blocks for all the deep learning employed in the field of computer vision.

1. **Convolutional features for visual recognition**

**You will learn about**

* The general principles underlying modern computer vision architectures based on deep convolutional neural networks.
* To analyze convolutional architectures tailored for a number of conventional problems in vision:
* image categorization,
* fine-grained recognition
* content-based retrieval,
* Face recognition.
* To build your own key-points detector using a deep regression CNN

1. **Object detection**

**You will learn about**

* Object detection task — one of the central problems in vision.
* Conventional sliding window + classifier approach culminating in Viola-Jones detector. Tracing the development of deep convolutional detectors
* R-CNN and single shot detector models.
* Practice includes training a face detection model using a deep convolutional neural network.

1. **Object tracking and action recognition**

**You will learn about**

* video analysis and includes material on optical flow estimation,
* Visual object tracking and action recognition.
* Motion is a central topic in video analysis, opening many possibilities for end-to-end learning of action patterns and object signatures.
* Computer vision architectures for video analysis including visual trackers and action recognition models.

1. **Image segmentation and synthesis**

**You will learn about**

* Semantic image segmentation and image synthesis problems.
* Modern CNNs tailored for segmentation employ multiple specialized layers to allow for efficient training and inference.
* Generative Adversarial Networks — a bright new idea in machine learning, allowing to generate arbitrary realistic images.