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Demystifying Deep Learning: A Practical Approach in MATLAB

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Deep learning can achieve state-of-the-art accuracy in many humanlike tasks such as naming objects in a scene or recognizing optimal paths in an environment.

The main tasks are to assemble large data sets, create a neural network, to train, visualize, and evaluate different models, using specialized hardware - often requiring unique programming knowledge. These tasks are frequently even more challenging because of the complex theory behind them.

In this seminar, we'll demonstrate new MATLAB features that simplify these tasks and eliminate the low-level programming. In doing so, we'll decipher practical knowledge of the domain of deep learning. We'll build and train neural networks that recognize images, classify signals, and figure out the interested area in an image at pixel level.

Along the way, you'll see MATLAB features that make it easy to:

- Manage large sets of images
- Create, analyze, and visualize networks and gain insight into the black box nature of deep networks
- Build networks from scratch with a drag-and-drop interface
- Perform classification tasks on images and signals, and pixel-level semantic segmentation on images
- Use of models already available such as GoogLeNet and ResNet
- Import models from TensorFlow Keras, Caffe, and the ONNX Model format
- Speed up network training with parallel computing on a cluster
- Automate manual effort required to label ground truth
- Automatically generate source code for embedded targets

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