

Demystifying deep learning: A practical approach in MATLAB

Are you new to deep learning and want to learn how to use it in your work? 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 handwriting, classify food in a scene, and figure out the drivable area in a city environment.

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

- Manage extremely large sets of images
- Visualize networks and gain insight into the black box nature of deep networks
- Perform classification and pixel-level semantic segmentation on images
- Import training data sets from networks such as GoogLeNet and ResNet
- Import and use pre-trained models from TensorFlow and Caffe
- Speed up network training with parallel computing on a cluster
- Automate manual effort required to label ground truth
- Automatically convert a model to CUDA to run on GPUs

Speaker: Loren Shure, MathWorks

Loren has worked at MathWorks for over 29 years. For the first 27 of these years, Loren coauthored several MathWorks products in addition to adding core functionality to MATLAB, including major contributions to the design of the MATLAB language. She is currently part of the Application Engineering team, enabling Loren to spend more time and energy working with customers. She graduated from MIT with a B.Sc. in physics and has a Ph.D. in marine geophysics from the University of California, San Diego, Scripps Institution of Oceanography. She is a Senior Member of IEEE. Loren writes about MATLAB on her blog, [The Art of MATLAB](#).



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