

## Exclusive MATLAB sessions by a MathWorks-Expert at TU Graz

On 16 October, 2018 teaching staff and students of TU Graz have the opportunity to participate in expert sessions on MATLAB provided by Loren Shure from MathWorks, USA.

PLEASE NOTE: Due to organisational reasons, please register for each session. The **number of participants is limited**.

### Demystifying deep learning: A practical approach in MATLAB

- When: 16 October 2018 from 10.00 am to 12.00 am
- Where: Lecture Room i2 (HFEG038J), Inffeldgasse 12, ground floor

"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

### Advanced Programming Techniques in MATLAB

- When: 16 October 2018 from 2.00 pm to 4.00 pm
- Where: Lecture Room L (NA01010), Lessingstraße 25, 1<sup>st</sup> floor

"In this session you will gain an understanding of how different MATLAB data types are stored in memory and how you can program in MATLAB to use memory efficiently. In recent versions, MATLAB introduced several new programming concepts, including new function types. We will illustrate and explore the usage and benefits of the various function types under different conditions. You will learn how using the right function type can lead to more robust and maintainable code. Demonstrations will show you how to apply these techniques to problems that arise in typical applications.

Highlights include: Memory handling in MATLAB and Various function types"

## Loren Shure Bio

### *MathWorks*

Loren has worked at MathWorks for over 30 years. For the first 27 of these years, Loren co-authored 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](#).

