

## Upcoming Seminar at King Saud University

### Overview

King Saud University - College of Computer and Information Sciences-CCIS is glad to organize seminar on MATLAB & Simulink, this seminar showcases how to bridge the gap between theory and practice when it comes to using MATLAB®. The seminar will include technical presentations and concrete examples.

By attending these seminars, you will learn how to program and build models with the MATLAB product family. You will also gain valuable experience in MATLAB, which is among the top required skills listed in engineering and science job postings

**Venue:** College of Computer and Information Sciences-CCIS both Male and Female sections  
Male section: **Auditorium A Building 31**, Female section: **Maria Auditorium**

**Speakers:** **Dr. Joachim Levelt** and **Eng. Stefano Olivieri**

**Date:** Monday 1<sup>st</sup> Of October 2018

**Time:** 9:00

Time	Title
09:00	<b>Introduction</b> - MathWorks Resources for Educators & Students MATLAB Academy – Courseware – MATLAB Grader - MATLAB Online - MATLAB Mobile - File Exchange
09:30	<p><b>A practical approach to Deep Learning with MATLAB</b> 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. Through practical examples like object recognition or food classification.</p> <p><b>Topics</b> Manage large sets of images Import training data sets from networks such as GoogLeNet and ResNet Import, use and manipulate pre-trained models from other frameworks, like TensorFlow, Keras and Caffe Create, analyze, and visualize networks and gain insight into the black box nature of deep networks Perform classification tasks on images Speed up network training and inference with parallel computing and GPUs</p>
10:30	<b>Break:</b> Refreshment, snacks and coffee.
10:45	<p><b>Real-time prototyping of DSP algorithms on live real-world audio and visual signals</b> Across both research and teaching, digital signal processing projects often require implementing algorithms in real time and running them on live real-world signals for testing and validation, proof-of-concept demonstrations, more impactful dissemination of results, or more effective learning. Signal processing teachers and researchers are generally very familiar with MATLAB for algorithm exploration. This presentation will use practical and reproducible examples to illustrate how to quickly turn theory and algorithms into engaging real-time system prototypes.</p> <p><b>Topics</b> Leverage popular DSP algorithms, including for computer vision and audio applications Connect MATLAB and Simulink to live sensors and signal sources like sound cards and video cameras Make your MATLAB code ready for real-time prototyping Run algorithms and models on mobile devices and external embedded platforms</p>
12:00	<b>Break:</b> Prayer Time
13:00	<p><b>Engineering system design with MATLAB and Simulink</b> In this seminar, we'll demonstrate how to use MATLAB and Simulink to address modeling, design and simulation of dynamic engineering systems. Specifically, we'll go through practical examples to illustrate the entire workflow from mathematical formulation, down to analytical/numerical solving, system modeling and simulation, and implementation on embedded hardware like Arduino.</p> <p><b>Topics</b></p> <ul style="list-style-type: none"> <li>• Mathematical modelling of dynamic systems</li> <li>• Analytical and numerical system solving</li> <li>• Building and simulating engineering models</li> <li>• Working with sensors and components (microcontrollers, motors, encoders, etc)</li> <li>• Automatic code generation for embedding algorithms onto hardware</li> </ul>
14:15	Q&A
14:30	End of Seminar

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