



Deep Learning with MATLAB

Course Purpose

We will learn about the “Deep Learning Revolution” that began in 2012, the theory and the practice of constructing and training convolution neural networks from scratch.

We will go through typical layers of CNN, back-propagation theory and methods of efficient training.

We will use MATLAB’s deep learning framework in order to perform computer vision classification and detection tasks.

The course is composed from 80% theory and 20% practice.

Pre-Requisites

- Basic knowledge in programming
- Basic understanding of Linear Algebra & Calculus

Course Duration

Three Days (9:00-17:00)

Teaching Method

The course combines lectures, demonstrations and practical exercises in MATLAB.

The course is in Hebrew but the training materials are in English.

The Instructors

Tamir Nave – Ten years algorithm developer, specialized in computer vision and deep learning (www.threeminutesacademy.com)

Roy Fahn – Deep learning and computer vision application engineer (Systematics)

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Course Syllabus

Day	Lecture	Duration
1	Introduction to machine learning	2
	Introduction to deep learning	1
	Basic Terms in CNN	2.75
	Exercise Session: Inference using a trained network	0.75
2	Training a CNN	3
	Exercise Session: Constructing & Training a CNN from scratch	1
	Network Architectures	2.5
3	Exercise: Transfer learning	1
	Detection and Image segmentation	2
	Exercise: image labeling and detector training	1
	Recurrent neural networks	1.5
	Algorithm deployment	0.5
	Advanced deep learning capabilities in MATLAB	0.5

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