



ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ
ΣΧΟΛΗ ΗΛΕΚΤΡΟΛΟΓΩΝ ΜΗΧΑΝΙΚΩΝ ΚΑΙ ΜΗΧΑΝΙΚΩΝ ΥΠΟΛΟΓΙΣΤΩΝ
ΤΟΜΕΑΣ ΣΗΜΑΤΩΝ, ΕΛΕΓΧΟΥ ΚΑΙ ΡΟΜΠΟΤΙΚΗΣ

Ο Τομέας Σημάτων, Ελέγχου και Ρομποτικής
Της Σχολής Ηλεκτρολόγων Μηχανικών και Μηχανικών Υπολογιστών του ΕΜΠ
σας προσκαλεί να παρευρεθείτε στην διάλεξη* του

Assoc. Prof. Iasonas Kokkinos
CentraleSupélec / INRIA

με θέμα:

"Trust is good, but control is better: Incorporating Domain Knowledge in Deep Learning for Computer Vision"

Η διάλεξη θα γίνει την **Παρασκευή, 3 Ιουνίου 2016, ώρα 12:00**

Στο **Αμφιθέατρο Πολυμέσων** (Βιβλιοθήκη Ε.Μ.Π., Πολυτεχνειούπολη Ζωγράφου)

Abstract

Deep Learning has been shown to yield excellent results across a range of Artificial Intelligence problems, including Computer Vision, Speech Recognition, and Natural Language Processing among others.

We will start this talk with a tutorial presentation of the ideas underlying Deep Convolutional Neural Networks (DCNNs), which provide a natural blend between signal processing and machine learning. We will illustrate some of the inner workings of these powerful classifiers and will present some of the visual tasks where they have been shown to be most successful.

Despite their huge successes, DCNNs are still largely considered as 'black box' classifiers over which we may have limited control. We will therefore move on to presenting recent research efforts on integrating established computer vision ideas with DCNNs, thereby allowing us to incorporate task-specific domain knowledge in DCNNs.

Through these works we will see how established techniques such as Multiple Instance Learning, Dense Conditional Random Fields, Gaussian Conditional Random Fields and Spectral Clustering can be integrated within deep architectures, yielding consistent improvements over generic, domain-agnostic baselines.

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Βιογραφικό Σημείωμα

Iasonas Kokkinos obtained the Diploma of Engineering in 2001 and the Ph.D. Degree in 2006 from the School of Electrical and Computer Engineering of the National Technical University of Athens in Greece, and the Habilitation Degree in 2013 from Université Paris-Est. In 2006 he joined the University of California at Los Angeles as a postdoctoral scholar, and in 2008 joined as faculty the Department of Applied Mathematics of Ecole Centrale Paris (CentraleSupélec). He is currently an associate professor in the Center for Visual Computing of CentraleSupélec and is also affiliated with INRIA-Saclay in Paris. His research activity is currently focused on deep learning and efficient algorithms for object detection.

He has been awarded a young researcher grant by the French National Research Agency, serves regularly as a reviewer for all major computer vision conferences and journals, and is an associate editor for the Image and Vision Computing and the Computer Vision and Image Understanding journals.

Links to References:

Boundary detection:

<http://arxiv.org/pdf/1511.07386.pdf>

Semantic segmentation:

<http://arxiv.org/pdf/1603.08358.pdf>

<http://arxiv.org/pdf/1511.04377.pdf>

<http://arxiv.org/pdf/1412.7062.pdf>

Object detection:

http://cvn.ecp.fr/personnel/iasonas/pubs/PKS_deformations_deeplearning_CVPR15.pdf
