Postdoctoral position in computer vision: Online domain adaptation in continuously changing environments

We are looking for a postdoctoral fellow interested in conducting research on online learning, domain adaptation and continual learning. This postdoctoral researcher position is part of the ODACE project funded by the French National Research Agency (ANR).

Candidates should have a PhD with expertise in one of more of the following areas: computer vision, image processing and analysis, machine learning and deep learning. They are expected to demonstrate independent research capabilities and to have excellent programming skills in python/pytorch/tensorflow, and excellent writing and communication skills.

Potential applicants should send their application (CV, letter of interest and two references) to me at stephane.lathuiliere@telecom-paris.fr.

Project abstract:

In the last decade, deep neural networks became state-of-the-art in many computer vision tasks. Nevertheless, their performances are affected when test data are acquired in environments visually different from the data used at training time. Recent domain adaptation techniques are efficient to mitigate this problem but they assume that target data distributions are fixed and available in a batch setting. These limitations severely constrain potential applications. In ODACE, we consider the scenario of an autonomous device, such as a car or a robot, navigating in a continuously changing environment.

In this scenario, the different vision tasks are performed using a deep neural network. We focus more specifically on structured prediction tasks such as depth estimation and instance segmentation. In this project, we propose to develop new types of deep learning algorithms where the neural network parameters are continuously adapted to handle the current visual environment. The goal is to design dynamic mechanisms that can online adapt the network representations without human supervision using only the video frames from the current environment.

Context and Environment:

The position will be located at Telecom Paris, a CS/EE school of Institut Polytechnique de Paris. Telecom Paris is one of the best French schools for digital sciences and technologies. More precisely, the recruited post doc will join the Multimedia Team, within the Image, Data, Signal Department (IDS), and the LTCI laboratory.

The Multimedia team has a long activity in the domain of video and image coding and transmission. More recently, video analysis and deep learning activity have become more and more relevant for the team. The team has the target to expand its activity in this area, and several new and exciting research projects have just been launched, such as research programs in deep Learning for image and video generation, and domain adaptation for computer vision tasks. Applicants are expected to provide an outstanding academic research record and will be encouraged to work in collaboration with PhD students. This is a full-time 18-month position, with the possibility of renewal based on satisfactory performance.