

Opening of a PhD position in Data Simulation, Deep Machine Learning and Robotics

@Imagine Team of LIRIS lab, Ecole Centrale de Lyon

A PhD position of 3 years duration is opened on data simulation, machine learning and robotics within the Imagine team, [LIRIS lab](#) at [Ecole Centrale de Lyon](#), under the supervision of Ass.Prof.Emmanuel Dellandréa and Prof. [Liming Chen](#).

Background

[“Learn-Real”](#)¹ is a Chist-Era European project in partnership with two leading european research institutions in robotics, namely [Idiap](#), Swiss and [Italian Institute of Technology](#), Italy. It aims to improve the reproducibility in learning physical manipulation skills of robots with simulators using realistic variations of the environment (e.g., day/night, good/bad weather).

Within this project, one of the task focus on the visual engine, and is to provide a toolset to generate synthetic RGB-D images of both textured and texture-less objects (e.g. fruits) with a ground truth for scene understanding (i.e. , objects, instances, and their 6D pose). The other task will focus on the physics engine, allowing the robotics simulation to create efficiently deformable objects to be manipulated. Robotics learning will be implemented in both simulation and reality, using a 7-DOF robotics arm (Panda, from Franka Emika) and will be based on Deep Learning, Reinforcement Learning and/or Learning from Demonstration.

We are seeking a highly motivated student (from Master or Engineering Schools) in the field of computer sciences, more specifically applied to machine learning, robotics and/or simulator/gaming engine/materials simulation.

Skills

The candidate should have programming skills (Python, C/C++), ideally already applied to machine learning, robotics and/or simulator/gaming engine. Fluency in either French or English is required.

More specifically, knowledge on general simulation tools/graphics software (e.g. Unity 3D, Blender, pyBullet) is definitively an advantage, as well as acquaintance with robotics framework and simulators (e.g. Gazebo, V-Rep, ROS) and Deep Learning

¹ <https://learn-real.github.io> - on construction

methods (e.g. GAN). Training and support in such techniques and tools will be provided in any case.

Environment

The successful candidate will work in direct collaboration with researchers having an established expertise in computer vision and machine learning in partnership with an international academic consortium (Idiap/EPFL from Switzerland and Italian Institute of Technology from Italy). Ecole Centrale de Lyon is part of the top ten engineering schools in France (Grande Ecoles), part of the elite of "Grande Ecoles" offering access to excellent quality graduate and undergraduate students.

Application

Applications should include a detailed curriculum vitae, brief statements of interests and two reference letters. The expected starting date is at the beginning of the new academic year (*i.e.* September/October 2019).

Applications and letters should be sent via electronic mail to:

* Dr. Maxime Petit (maxime.petit@ec-lyon.fr)