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Nr. crt.	Titlu lucrare	Scurtă descriere	Cerințe	Nivel (licență/ master)
1	<b>Augmented-reality trash detection</b>	In the context of the SeaClear EU project, the student will develop an application for popularization in which any person can move a tablet, look at example litter or other objects with the tablet's main camera, and apply a deep-learning-based method that will detect and label the objects in the user interface.	Python, Android programming.	Licență sau Master
2	<b>Classification from point clouds</b>	We are running a PhD project on reinforcement learning for designing trajectories of a 3D sensor (LIDAR, infrared, etc.) so as to classify as fast as possible a set of objects in a scene. The student will be focusing on the subproblem of classification from a point cloud.	Python, ROS.	Licență sau Master
3, 4	<b>Support roles in underwater robotic mapping</b>	In the context of the SeaClear EU project, we are working on mapping underwater litter with autonomous underwater vehicles. The student will be playing a support role in this, helping with the development of the litter registration and tracking methods, pose estimation and communication for the robot etc.	Python, ROS.	Licență sau Master
5, 6	<b>A platform for underwater mapping tests</b>	In the context of the SeaClear EU project, the students will focus on developing a real-life scale model of the mapping system using an already existing BlueRobotics BlueROV2, a pool, and an overhead-camera-based positioning system. Components include control design for the robot, positioning from the overhead camera image, image processing, and mapping.	Matlab, Python, ROS.	Licență sau Master
7	<b>UGV-UAV target search</b>	We have developed an algorithm for target (e.g. litter, disaster victim etc.) search using multiple robots. In this project, we will be focusing on implementation of the method on real robots – either two Parrot Mambo drones, or, preferably, Parrot Mambo and a ground TurtleBot robot.	Matlab/Simulink, ROS	Licență sau Master
8	<b>Reinforcement learning for control</b>	The student will work either on fundamental developments in reinforcement learning, on their real-time application to nonlinear control, or a combination of the two.	Strong analytical and mathematical skills, algorithmics, and	Licență sau Master

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			Matlab programming.	
9, 10	<b>AI planning for nonlinear control applications</b>	In this project the student will work either on fundamental developments in optimistic planning, a model-based predictive control algorithm; on their real-time application to nonlinear control, or a combination of the two.	Strong analytical and mathematical skills, algorithmics, and Matlab programming.	Licență sau Master
11	<b>DC motor setup for identification experiments</b>	An Arduino-controlled, Dynamixel DC motor that should be encapsulated in a USB-connected box and usable for system identification experiments (transient analysis, step and impulse response identification, FIR and parametric models). A prototype is available.	Embedded programming, Matlab.	Licență sau Master