ŞL Natsakis Tassos

Nr.crt.	Titlu lucrare	Scurta descriere	Cerinte	Nivel (licenta/master)
1	Autonomous navigation of a mobile robot	This thesis is connected to a possible participation at the European Rover Challenge (https://roverchallenge.eu/en/erc-robotics-competition/). The challenge is about designing an autonomous rover that explores Mars. This subtask is about navigating unknown terrain and gathering relevant information about the environment.	Robotics, ROS	Licenţa
2	Device for surface sample collection from the ground	This thesis is connected to a possible participation at the European Rover Challenge (https://roverchallenge.eu/en/erc-robotics-competition/). The challenge is about designing an autonomous rover that explores Mars. This subtask is about designing a device for scooping, collecting, and storing ground surface samples.	Robotics, ROS, Electronics, Hardware design	Licenţă
3	Device for deep sample collection from the ground	This thesis is connected to a possible participation at the European Rover Challenge (https://roverchallenge.eu/en/erc-robotics-competition/). The challenge is about designing an	Robotics, ROS, Electronics, Hardware design	Licenţă

		autonomous rover that explores Mars. This subtask is about designing a device for drilling, collecting, and storing ground deep samples.			
4	Hollistic control of a mobile robot with a robotic arm	This thesis is connected to a possible participation at the European Rover Challenge (https://roverchallenge.eu/en/erc-robotics-competition/). The challenge is about designing an autonomous rover that explores Mars. This subtask is about controlling a robot arm coupled with a mobile robot to achieve several maintenance tasks	Robotics, ROS, Control theory	Licența	
5	Path planning optimization for mobile robots	This thesis is connected to a possible participation at the European Rover Challenge (https://roverchallenge.eu/en/erc-robotics-competition/). The challenge is about designing an autonomous rover that explores Mars. This subtask is about optimizing the trajectory planning of a mobile robot to reduce energy consumtpion and avoid dangerous terrain.	Robotics, ROS	Licența	
6	Grapsing strategies for a smart actuated grapple	This thesis is connected to the SEACLEAR2 project (https://seaclear2.eu), and our	Robotics, ROS	Licența	

		involvment in developing a smart grapple for handling heavy underwater litter. Our current design allows for complex grasping techniques, which requires defining grasping strategies based on the shape, size, and weight estimation of the object. This work would be able defining the grasping strategies and testing them in a simulated environment.		
7	Robotic glove for finger rehabilitation	A stroke is a medical condition that affects the quality of life of millions of people worldwide. A usual symptom of a stroke is the inability to control the motion of ones fingers, resulting in problems achieving every day tasks. The goal of this thesis is to design and implement a device that will perform a passive motion of the fingers of a patient. The device should be easily attached to the patients hand and should control the extention and flexion of each finger separately.	3D design, Hardware, Electronics, Control	Licența
8	Quantitative analysis of the performance of a depth camera	Depth cameras are constantly being used in real-life application, one important use	ROS, Data analysis, Signal processing	Licența

		case being the detection of motions of human beings. The claims of the manufacturer for their accuracy are not always well documented, and comparison to ground truth data is necessary. The goal of this thesis is to make a quantitative analysis of the accuracy of skeleton tracking of an Orbbec Astra Pro camera, compared to data acquired by an OptiTrack system.			
9	Online and real-time intention prediction of upper limb motion	With the advent of collaborative robots, the opportunity to use robotic arms in the vicinity of humans has emerged. Human-robot collaboration is a rapidly developing field for industrial applications, but can also have significant impact on healthcare related applications, such as rehabilitation. However, in order to implement human-robot collaboration, there has to be real-time and objective communication to the robot about the intentions of the human.	Matlab, Signal processing, ROS		Licența

		The goal of this project is to implement in ROS an already existing algorithm for the prediction of the intention of motion. The training of the algorithm is happening currently offline, but it would be very beneficial to perform this online and in real-time.		
10	Robotic fire-fighting robot	The goal of this thesis is to design and implement a fire-fighting robot that is able to detect where is the focus of a fire and direct a water jet towards its base. To achieve this, the robot should be able to control the azimuth and altitude of the water cannon, together with the water pressure.	Robotics, Arduino Linux, ROS	Master