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| Nr. crt. | Titlu lucrare | Scurtă descriere | Cerințe | Nivel (licență/ master) |
|----------|--|---|--|-------------------------|
| 1, 2 | Mapping radio bandwidths with a drone | In this project, we aim to design and study a trajectory control strategy for mobile robots that must map an unknown surface of interest, here a radio map. At each point along the trajectory, the robots make an observation. The robots must choose control actions in such a way that the observations maximize the amount of information collected. Algorithmic developments will be followed by real-time applications using Parrot Mambo drones. | Math and programming in Matlab/Simulink. | Licență sau Master |
| 3 | Simulator development for litter mapping | Simulator of a litter map sensed by a mobile robot using a 3D sensor. | Programming (Python). | Licență |
| 4, 5 | Litter mapping from sonar and camera images | Various topics including point cloud registration, 2D to 3D registration, litter detection, etc. | Math, algorithmics, and programming (Python) | Licență sau Master |
| 6, 7 | Simulated drone racing contest | We are looking for students to enter a drone racing contest that will be held next summer. Control development and/or image processing must be developed. Real-time application is an option. | Algorithmics and programming in Matlab/Simulink | Master sau Licență |
| 8 | Optimistic planning for hybrid optimal control | Test in simulated problems a new algorithm for hybrid optimal control (continuous and discrete actions) using optimistic planning. | Strong analytical skills, programming in Matlab. | Licență sau Master |
| 9, 10 | Assistive autonomous UAVs | Various topics for UAVs that assist elderly or disabled persons, including simulated “herding”. | Math, algorithmics, and programming. | Licență sau Master |
| 11, 12 | AI planning and learning for nonlinear control applications | 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. | Math, algorithmics, and programming. | Licență sau Master |