

I believe teaching is an integral part of being a scientist. Orders-of-magnitude leaps in technology will only be accomplished by next generations of motivated scientists and engineers, and so it is essential to foster them. Moreover, teaching is a symbiotic relationship: as students learn, they also bring fresh ideas and new perspectives on our arguments that lead us to re-scrutinize our knowledge. I am therefore committed to motivating students and guiding their learning by making my teaching both accessible and interesting.

Student Mentoring

During my postdoctoral appointment at the University of Michigan, I have advised several students at the graduate level. I co-advised a master's student throughout the completion of his MSc thesis with Prof. Ryan Eustice, and I currently advise two PhD students on their doctoral work that will lead to two completed PhD theses this year. In addition, I have closely followed the preparation and development of Prof. Eustice's courses *ROB550: Robotic Systems Laboratory* and *NA568/EECS568: Mobile Robotics: Methods & Algorithms*, for which I have provided occasional consultation to students.

Engineering Competitions

As a graduate student at the University of Girona (UdG), I had the pleasure of taking leadership in UdG's entry in the 2010 and 2011 editions of the Student Autonomous Underwater Challenge - Europe (SAUC-E), an underwater robotics student competition involving teams from universities from all around Europe. Our team, where I took the roles of software development manager and team leader, built an underwater robot from the ground up that won the competition in 2010, was runner-up in 2011, and has been subsequently developed into a commercially available platform. Helping the more novice members of the team with some guidelines on what had to be accomplished, and witnessing them come up with bold working solutions (ardently discussing between them about Kalman filters and PID controllers in the process) was truly rewarding to me. I also served as a judge in the FIRST Lego League competition at the elementary- and high-school level held at UdG. Beyond the compelling role competitions play in motivating and engaging students, these experiences made clear to me that hands-on activities are invaluable in furthering the next generations of scientists and engineers.

Teaching Goals

As a faculty member, I plan to emphasize acquisition of problem-solving skills, especially throughout the undergraduate level, in contrast to just learning a specific programming language or technique. I wish to leverage hands-on experience as a motivating and instrumental cornerstone of my teaching activities, with the same use-inspired commitment that propels my research also driving my teaching.

I am qualified to teach courses at the undergraduate level on a variety of topics in engineering, computer science, and robotics, including computer architectures, systems engineering, algorithms, programming languages, operating systems, theory of computation, data structures, software engineering, and artificial intelligence. I would be particularly interested in teaching an introductory course to autonomous robotics at the advanced undergraduate level, since this subject provides an excellent testbed for putting together what students learn from other engineering disciplines.

At the graduate level, I can teach courses on a broad spectrum of subjects related to robotics, including localization and mapping, planning, manipulation, computer vision, and machine learning. In accord with my research interests, I am excited to teach courses on probabilistic robotics and decision-making in dynamic and uncertain environments. In addition to providing fundamentals, these courses would familiarize students with the latest research developments on robotics and related areas and provide the opportunity to tackle practical real-world problems.

I have experienced competition challenges being really motivating to students in some courses, like an object classification challenge in a computer vision class, and so I intend to leverage this resource. Organizing and fostering participation in competitions, both in a university setting and as outreach activities, is also in my teaching plans.

At the earlier stages in particular, I am interested in pursuing activities that encourage women and other under-represented groups to pursue careers in robotics and computer science, with the intent of furthering diversity and heterogeneity of ideas, which are essential in any area of science.

Overall, I think that sparking student's interest is key for the success of teaching. Therefore, in my teaching approach I intend to connect abstract concepts with concrete, practical instances that highlight the relevance of the matter at hand and promote discussion so that students empathize with the material. Whether in small or large classes, or in outreach activities, I am passionate about bringing the exciting insights of robotics, engineering, and science to the next generations of students.