Robotics: Science & Systems
Practicals

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Website: http://wcms.inf.ed.ac.uk/ipab/rss/practicals
Learning outcomes

• **Rapid prototyping** of robot hardware.
• Implementation of **control** and **planning** techniques for **navigation**.
• Implementation of **inverse kinematics**.
• Implementation of **localization** techniques.
• Experiment design.
• Scientific report writing
Desired skills

• Programming in **Python**. Knowing other programming languages is an advantage. Introduction to Python will be provided in a tutorial.

• Background in **computer vision**. We will provide a basic introduction in the lectures.

• Experience with the **OpenCV library**.

• **Mechanical engineering** training or experience. We will provide basic introduction.

• Version control, e.g. git
Autonomous inspection

• Navigate around the arena autonomously.
• Locate Points of Interest (POI).
• Inspect POIs marked by a reflective tape.
• Localize relative to a communication satellite.
• Point an antenna towards the satellite.
• Return back to the deployment location.
Delivery

- Week 1: form a team.
- Week 2: kit handout.
- Weeks 3-4: work on minor milestones.
- Week 5: **Major Milestone 1**.
- Weeks 6-8: work on minor milestones.
- Week 9: **Major Milestone 2**.
- Week 10: **Final report, return the kit**.
Marking

• The practical is worth 40% of your total mark:
  – Major milestone 1: 8%  Week 5
  – Major milestone 2: 16%  Week 9
  – Final report (individual): 16%  Week 10

• Minor milestones are not marked.
Sign up

• Times and the venue:
  Mondays 11:00-13:00 AT3.04
  Thursdays 11:00-13:00 AT3.04

• **Teams of 3** students.

• Sign up at [goo.gl/YgBzdP](https://goo.gl/YgBzdP)

• First practical in Week 2.

• Bring **£5 deposit** for the kit!