Centre for Doctoral Training in Robotics and Autonomous Systems

edinburgh-robotics.org
MScR RAS:
Master by Research in Robotics and Autonomous Systems

Overview
- Course structure
- Core courses
- Elective courses
- Master’s thesis
- Example projects
- Outlook to Ph.D.
## MRes RAS
### Course Structure

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<tr>
<td>Taught courses</td>
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[Image of university buildings]
Core Courses

- Robotics: Science and Systems (R:SS)
  
  kinematics, dynamics and control; motion planning; state estimation, localization and mapping; visual geometry, recognition of textured objects, shape matching and object categorization

- Autonomous systems research (ASR)
  
  Theme 1: Sensors and Actuators;
  Theme 2: Artificial Intelligence & Intelligent Agents;
  Theme 3: Advanced Interaction Design;
  Theme 4: Linear Control;
  Theme 5: Embedded Systems
RAS-CDT Programme

Courses
- Robotics Science and Systems
- Autonomous Systems Research
- Electives

Project

Training:
- Gateway Events
- Software Bootcamp
- VOX & Presentation Skills
- Creativity
- Internship and Career Planning
- Competitions - EURATHLON, ROBOCUP
Elective Courses

Choose either
- 2 courses at HWU (each is 15 credits)
or
- 3 courses at UoE (each is 10 credits)

Typically you will take 1 course in first term
and 2 or 3 courses in second term

Options for Semester 1:
- Machine Learning and Pattern Recognition
- Information Theory
- Algorithmic Game theory and Applications
- Neural Computation
- 3D Models and Applications
- Dynamics
- Digital Signal Processing
- ...
MRes Thesis

- Robotics Research Report (RRR)
- Robotics Research Proposal (RRP)
- Master's thesis

Literature review
Workplan
Project report
NEW ARRIVALS AT ROBOTARIUM
Humanoid Robotics Research

Flagship Robotarium Platform:
ECR-NASA Valkyrie Humanoid
UK Hub for Humanoids Research
Space Robotics Challenge
Deep Learning for Motion Synthesis

A deep learning scheme which can automatically learn an embedding of motion data in a non-linear manifold using a large set of human motion data with no manual data pre-processing or human intervention.

The TrimBot2020 Horizon 2020 project started in 2016 investigating the robotic and computer vision technologies needed for a garden hedge trimming robot.

Final target robot will autonomously complete hedge trimming and rose trimming tasks specified by the users.

Data will be from colour, 3D stereo and 3D video analysis, and will be used to help the robot to navigate to assigned locations and trim to the given shape specifications.

Robot in project’s test garden in Wageningen acquiring data under teleoperation

Coordinator: Professor Bob Fisher
Upper and Lower Limb Orthoses

Outlook to Ph.D. phase

- Starting in Year 2: 9/2018 (cohort of 2017)
- Yearly reports and reviews: 6/2020
- Thesis submission: 8/2021
More information

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