ROS Workshop  
*September 24 & 25, 2012*

**Syllabus**

**Description**

This workshop is an introduction to ROS (Robot Operating System). The course will be lead in three strands: social robotics, hand robotics and a quadrotor. This course contemplates basic ROS configuration and implementation of specific ROS modules per each strand. A theoretical background of ROS will be presented, and practical exercises will also be addressed. In the end projects are presented for further ROS training.

**Goals**

The objective of this course is to introduce ROS for those who are interested on developing robotics application. The students will be prepared to use, create, develop, integrate and communicate both with preexisting as also new modules of ROS. Theoretical examples will be given and practical exercises will be proposed.

**Outcomes**

By the end of this course, students will be able to develop and implement new ROS modules, use the existing modules already presented inside the core of ROS. Understand the importance of using a common robotic framework.
Prerequisites / Requirements

- Interests on electrical or computer engineering, or related areas.
- Skills on C programming. Preferable to be familiar with Linux and/or Unix operational systems.
- Background on the robotics area.

Instructors:

- **Tiago Caldeira** | tiago.caldeira@kustar.ac.ae
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    Khalifa University,
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- **José Prado** | jaugusto@isr.uc.pt
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- **Pedro Trindade** | pedrotrindade@isr.uc.pt
Audience

This course is devoted to people with interest and knowledge in electrical or computer engineering areas, or related areas. Preferably people should have background on Linux systems, Robotics, Sensor Annotation, Computer Vision and C programming.

Detailed Contents

- **Lecture 1**: Introduction to ROS. An introductory explanation about the ROS basic functionalities. Concepts of modules and messages will be presented.
- **Lecture 2**: Version specific. An explanation about the 3 strands of this course will be given: The three strands are Social Robot, Handle and Quadrotor.
- **Practical Exercises 1**: A first implementation exercise is given according to the selected strand.
- **Practical Exercises 2**: As continuation of the practical exercise 1, this class will present a new exercise to improve the skills of the student on the implementation of ROS modules
- **Project Proposal of Challenges**: Projects will be proposed, according to the each strand, as a module creation and implementation challenge.

Bibliography & Manuals


Additional Literature

## Schedule

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<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>24/09/12</td>
<td><strong>Lecture 1</strong> - Introduction to ROS</td>
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<td><strong>Lecture 2</strong> - (Social Robot, Handle, Quadrotor)</td>
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<td>25/09/12</td>
<td><strong>Practical Exercises</strong>: Social Robotics, Hand and Quadrotor Robotic</td>
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<td><strong>Project Proposal</strong>: Challenges proposed for all three strands</td>
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### ROS Course

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<tr>
<th>Time of Abu Dhabi</th>
<th>Time of Coimbra</th>
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<tr>
<td>17:00 - 17:50</td>
<td>14:00 - 14:50</td>
<td><strong>Lecture 1</strong> Introduction to ROS</td>
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<tr>
<td>18:00 - 18:50</td>
<td>15:00 - 15:50</td>
<td><strong>Lecture 2</strong> (SocialRobot, Handle, QuadRotor)</td>
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### Contact Information

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