ENGR 3502 Open Source Humanoid Robots

Instructor permission only – you need to request permission in SIS and provide the information described below. Make sure you read this description so that you understand what you are signing up for.

Description
The 21st century robot project offers an opportunity to be a “Robot Pioneer” with a kit for a humanoid robot endoskeleton. This kit is expected to be available in January 2015 (subject to change). This course will provide an opportunity for 5 teams to assemble the kits, design and 3D-print a “body”, figure out the Linux open-source C++ framework and make the robot do something interesting.

Intended participants:
The course is open to any engineering student who is a self-motivated, independent learner who is also a good team player. Participants need to be good problem solvers, great communicators, tinkerers by nature who handle frustration well. Each team member needs to be able to take charge of some aspect of the project and also needs to be able to take direction from others (who may be in charge of a different part of the project).

The kit is a beta version, which means that it almost certainly will not work as expected. If you want to participate in this project, you have to be able to deal with uncertainty and frustration. The instructor has no experience with this product or indeed with anything remotely similar so the participants need to be self-starters.

Team descriptions
The instructor will assemble 5 teams, each containing 4-5 people. Each team will need a diversity of skills and prior knowledge and creativity and the teams will work together (so not every team needs a full complement of skills). We need people who are familiar with complex software systems, open source, Linux, C++. We need people who are familiar with designing and printing 3D objects. We need people who are familiar with servos, motors, joints, movement and control. We also need people with strong organizational and planning skills, who can assess risks and strategize approaches to mitigate the risks. We need people who are creative and have a vision for what they want their robot to do. And we probably need people with knowledge and skills that haven’t been identified yet, so we need everyone to be able to research a problem, evaluate alternative solutions and develop meaningful test cases.

How to apply
To apply to participate, submit a request in SIS that concisely describes what you bring to the project and what you hope to accomplish. Over Thanksgiving, the instructor will evaluate the requests and assemble teams, granting permission to the 20 chosen participants. Since there is likely to be many more requests than slots, there will be some randomness in the selection process.
Logistics:
The class is scheduled for Wednesday & Friday afternoons (2:00 – 2:50) plus a Tuesday afternoon lab (3-5 PM) and will be held in Rice 120. The students will have access to Rice 120 after hours so that there should be ample time to work on the projects. Sometimes there will be formal lab assignments, other times the lab time will be made available for group work.

Future offerings
If the project kits work out, we will very likely offer courses later that use the robots. So we hope that this is not a 1-time only offering.

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