

Autonomous Mobile Robotics

C/CPS607 mid-term take-home test

Fall 2004

Name:	Student #:
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Instructions

- This is a take-home test that is due at the start of class on the 4th of November 2004.
- The work must be accomplished individually.
- You may not write any more than 1 page.
- Your work should be word-processed (no incomprehensible handwriting) checked for spelling and grammar and in a 12 pt font. If you do not adhere to these rules you will lose many, many marks.
- You must hand in this test paper as a cover sheet filling in your name and student number.
- Each student is to sign up for a research topic and write about one of the topics listed below
- All writings must be supported by **5 peer-reviewed journal papers or conference papers. These papers must be attached to the submission. No citations can be older than 1995.**
- This test will be marked out of 10.

The topics are as follows:

- 1) "Agency" is a very important concept in robotics. What defines a robotic agent? How is agency affected by autonomy, semi-autonomy and teleoperation?
- 2) Describe how autonomous services have helped teleoperated mobile robots? Pay particular attention to Internet-based robots.
- 3) Telepresence was a very hot topic in the early 90s and referred essentially to enhanced teleconferencing systems. How have mobile robots and related technology evolved to support a new concept of telepresence?
- 4) Intelligent wheelchairs are powered wheelchairs that are equipped with intelligent autonomous services for the assistance of their occupant. Discuss examples of useful services provided by such wheelchairs.
- 5) From the literature compare and contrast autonomous robots vs. telerobots.
- 6) Provide a discussion of the importance of sensing in mobile robots (telerobots or autonomous robot examples).
- 7) Telerobots (telebots) are remote control cousins to autonomous robots. Provide an overview from the literature of their typical architecture and subsystems.
- 8) List some of the common problems that researchers in telebotics and autonomous robotics both face.

Everyone will need to sign up for a topic from **October 22** until **October 25**. During this time, you can go to the **topic sign up sheet outside room ENG239** to sign your name beside the topic you are interested in. There are limited spaces available for each topic so sign up early!