

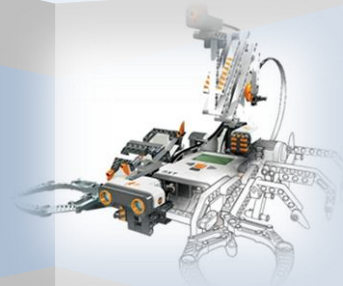
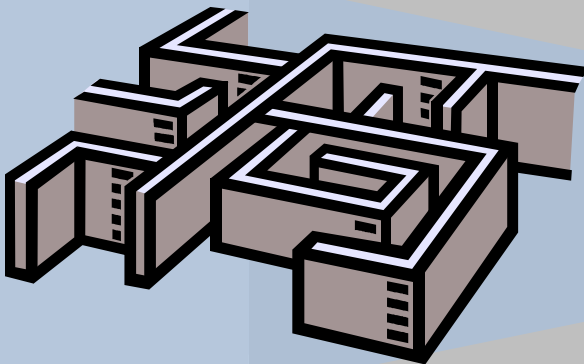
CSE101 Laboratories Spring 2011

Engineering Design and Problem Solving

**Team Building, Game and Robotics
Applications Development**

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List of Laboratories

- LAB 1 TEAMBUILDING AND CAREER OPPORTUNITIES
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 - CAREER OPPORTUNITIES IN COMPUTER SCIENCE AND ENGINEERING
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LAB 11 PRE-LAB QUIZ

LAB 11 ASSIGNMENT

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LAB 13 ROBOTICS COMPETITION

GAME 1: TREASURE DISCOVERY

GAME 2: AUTONOMOUS MAZE TRAVERSING

GAME 3: SUMO ROBOTS

OTHER GAMES AND APPLICATIONS

ROBOTICS DESIGN PROJECT

1. THE OBSTACLE ROBOT PROJECT: OVERALL DESCRIPTION
2. MEETING MINUTES FORMAT
3. FINAL REPORT OUTLINE
4. FINAL REPORT GRADING SHEET
5. PROJECT CONTRIBUTION PEER EVALUATION FORM

REFERENCES

Description

The laboratories are designed for the introduction engineering course with lecture and lab components. In the lecture components, the engineering design process is introduced. In our offering, we followed the text

H. S. Fogler and S. E. LeBlance, Strategies for Creative Problem Solving, Second edition, Prentice Hall, 2008.

In this lab sessions, we use the Part III, Appendix on Alice Movie and Game Programming and Service-Oriented Robotics Applications of the following text as the lab manual:

Yinong Chen, W.T. Tsai, Service-Oriented Computing and Web Data Management, 2nd Edition, Kendall Hunt Publishing, 2010, ISBN 978-0-7575-7747-5.

We provide hands-on laboratories to exercise the engineering design and problem solving process discussed in the lectures.

This lab manual consists of fourteen units. Each of the units consists two parts: Lab preparation and lab assignment.

- Lab preparation: Student should read the lab preparation part before attending the lab and take an online quiz consisting of 10 multiple choice questions. This preparation makes sure students know why, what, and how to do lab assignment in the unit.
- Lab assignment: Students will attend a three-hour lab session (50 minutes = lab hour) and complete the assignment with the session. This is a group assignment. Students work in a team three or four members.

Students will design and deliver a presentation in the middle of the course. A multi-week design project during the robotics laboratories will be used to strengthen and connect the weekly laboratory work and deliver a coherent product. The final product will be evaluated by a robotics challenge to be organized towards the end of the course. Students will also submit a final reports on their robotics project.

The materials in the lab manual have been used for the freshman course CSE101 Introduction to Engineering Design since Fall 2006. The materials are also used for ASU Summer Robotics Camp for high school students who are interested in an engineering career.

Yinong Chen

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- [8] Yinong Chen, Zhihui Du, and Marcos Garcia-Acosta, M., "Robot as a Service in Cloud Computing", In Proceedings of the Fifth IEEE International Symposium on Service Oriented System Engineering (SOSE), Nanjing, June 4-5, 2010, pp.151-158.
- [9] Yinong Chen, W.T. Tsai, Service-Oriented Computing and Web Data Management, 2nd Edition, Kendall Hunt Publishing, 2010, ISBN 978-0-7575-7747-5.