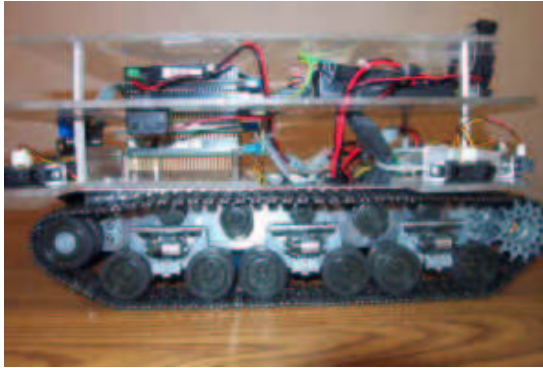
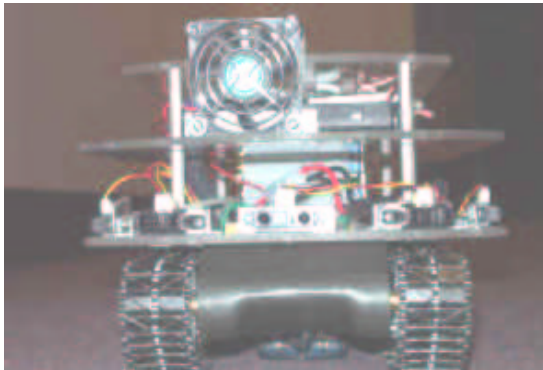


Pictures



Theseus side view showing PC104 Bus on left side of the robot.



Thesues front view showing cooling fan and distance sensors.

Project Members

Instructor

- Dr Stephen Linder

Students

- Kevin Sorrell
- Colin O'Brien
- David Pletcher
- Amer Khalid
- Neil Guyette
- Alli Walji

For more Information visit:

<http://faculty.plattsburgh.edu/stephen.linder/Academic/ProgrammingProject>

Labyrinth Mapper



Computer Science

CSC 419

SUNY Plattsburgh

The Labyrinth in Classical Mythology

The Labyrinth was a maze of winding passages, which was built by Daedalus for King Minos of Crete. The Labyrinth was built to house the Minotaur; a mythological beast with the head of a bull and body of a man.

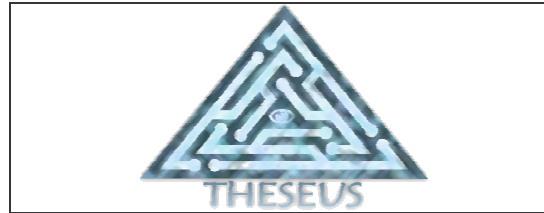
Theseus volunteered to go with one of the Athenian groups, which King Minos wanted to sacrifice to the Minotaur. He went with intentions of killing the Minotaur and bringing the Athenians back home.

Ariadne, daughter of King Minos, fell in love with Theseus. She gave Theseus a thread provided by Daedalus to help him find his way in the Labyrinth. He unwound the thread through the Labyrinth on his way to kill Minotaur and then followed it to find his way back out again.

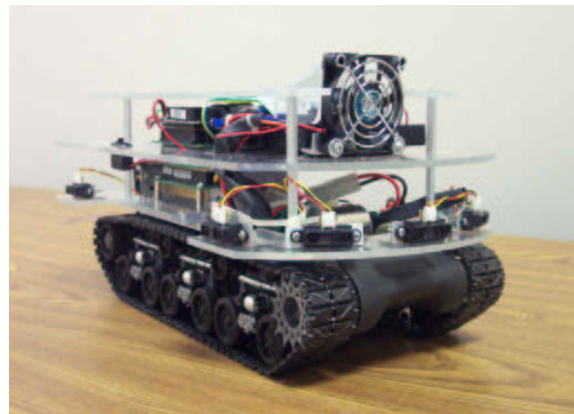
The Labyrinth Mapper

Labyrinth Mapper is a capstone project, instructed by Dr Stephen Linder. The project integrates all facets of our computer science education at Plattsburgh State University. The Labyrinth Mapper generates a map of the maze by using an

autonomous robot in the role of Theseus. The server Daedalus solves the maze and the client Ariadne displays the maze map. Together the three make a system that generates a graphical map of the maze.



As in the legend, Theseus navigates the maze. Our Theseus is a battery-powered robot that moves about the maze collecting data. We constructed Theseus using a radio controlled tank base and a PC/104 computer running the Linux operating system. Software on Theseus performs basic navigation and sends telemetry data to the server using wireless Ethernet.



As in the legend, Daedalus helps Theseus solve the maze. Daedalus is a software agent running on a desktop PC. Daedalus automatically generates a graph of intersections and corridors from the telemetry data. The graph is then used to navigate around the maze. The agent communicates with the Theseus using wireless Ethernet and with the client using Remote Method Invocation (RMI).



In the legend Ariadne showed her love for Theseus; today our Ariadne continues to show her love by displaying Theseus' adventures throughout the maze. Ariadne is a Graphical User Interface written in Java that can be run on any computer with Internet access to Daedalus. Ariadne displays graphs of the sensor data, a map of the telemetry data, and a graph of all the corridors and intersections found in the maze.