

PDA-Controlled Robot using Bluetooth

Bi-Weekly Report

2/16/2003

Quang Dang – Ta Chang Chao – Brady Wied – Matt Dean

This report is an update on the current status of our senior design project. According to the schedule outlined in our proposal, we should be designing the PDA user interface, working on the map specification and algorithms, and waiting on the robot and parts. These tasks are currently underway and appear to be ahead of schedule. Each member of the team has been given various tasks.

Quang Dang is currently developing a sonar component for the user interface that will display the current status of each of the sonar sensors on the robot. He is first spending some time learning how to create graphical elements on the PDA using C++, and will then apply these concepts towards the sonar display. This sonar display will show a small graphic of the shape of the robot, with lines extending from this graphic along the same direction as the physical sonar sensors and having a length proportional to the current strength of the sonar signal. This task has been separated into three basic stages. The first stage will show the proportional lines spaced evenly around a circle. The second stage will display the basic shape of the robot and place the lines on this outline based on their actual physical positions. The final stage will replace the lines with triangles showing the angular range of the sensors and will vary the color of these triangles based on the current strength: red will represent a near object, yellow will represent a medium-distance object, and green will represent either a far object or none at all.

Ta Chang Chao (Mike) is creating a graphical joystick that will be used to manually control the robot. Like Quang, he is first learning about C++ and Microsoft Foundation Classes (MFC). The joystick that he is developing will follow a staged implementation process similar to the one used for the sonar display. Initially, the joystick will be represented by a dot that follows the movement of the stylus and can be locked into position by double tapping. This will then be extended by providing a more graphic-rich display, perhaps showing the joystick in 3-D or converting the dot to a cross-hair. This display will also show the current coordinates of the joystick.

Brady Wied has downloaded the Pocket PC SDK, Embedded Visual Studio, and the ARIA environment. His current goal is to analyze the ARIA API and understand its architecture, especially looking at how we will integrate Bluetooth into the communication layer. From our current investigation, it appears that the Pocket PC provides a tool that allows the user to assign a virtual serial port such as COM 1 to a specific Bluetooth connection. If this isn't the case, we will need to add functionality to the API library to aid in the Bluetooth integration.

Matt Dean is currently porting ARIA to the Pocket PC environment. This is a time-consuming task because ARIA depends on libraries that aren't currently supported on the Pocket PC, but we have received word from ActivMedia that it is possible and has been done. We also recently received access to the current version of ARIA which will allow us to make changes on the newest version possible. Like the other members of the group, he is also learning more about MFC and C++.