

Urban Robot Use at Georgia Tech

1. URBAN ROBOT USAGE TO DATE

We received our Urban Robot (“Urbie”) in late May. After becoming familiar with basic operation, we conducted initial tests of the platform for approximately one week, including some indoor range testing on the wireless Ethernet datalink and the videolink. This testing utilized manual operation, teleoperation, and some practice with the *Mobility* interface.

Within another two weeks, we had completed a preliminary integration of the Urbie into *MissionLab* and were able to demonstrate basic behaviors under *MissionLab* control. It was during this period that we experienced an unknown problem that caused smoke to appear. We reported our problem and soon learned that it was a sonar board, and that it had happened to others as well.

As the demo at Fort Sam Houston approached, we concentrated on our more mature efforts with the Pioneer-AT platform, but we carried the Urbie with us to Ft. Sam and conducted a demonstration of a back-and-forth robot within the *MissionLab* framework. The replacement of the defective sonar board and other upgrades took place while we were there. The demonstration may be viewed, along with the Pioneer-AT demonstrations, in the video clip available at our web site (two formats, same video):

<http://www.cc.gatech.edu/ai/robot-lab/tmr/ftsamdemo.avi> (53 Megabytes), and

<http://www.cc.gatech.edu/ai/robot-lab/tmr/ftsamdemo.mpg> (89 Megabytes).



Figure 1: Urban robot under *MissionLab* control. Console is shown at left, where robot has already repeated a simple back-and-forth movement several times.

During this process, we learned that the interface at the CORBA level of the *Mobility* architecture was much easier to work with than the Pioneer PSOS interface, and was more comparable to our prior experiences with Denning and Nomadic robots. We also learned that the Urbie wireless Ethernet had very marginal range for the types of demonstrations that we planned for the hospital assessment scenario. It is likely that we would have to plant multiple receivers at the site to ensure reliable operation.

2. NEAR-TERM USE AND EXPECTATIONS

We plan to complete the interface to *MissionLab* at the *Mobility* CORBA level so that the robot can exhibit a broader range of behaviors, including some that are unique to the Urbie platform. This is the primary task for one of our Graduate Research Assistants. Depending on the level of success for this effort, we may demonstrate the robot with greater capabilities in October at Fort Sam.

3. EXPECTED TIMEFRAME FOR USE

Depending on upcoming renegotiation of statement of work, we expect complete integration of the Urbie into the *MissionLab* framework during the coming year, and it may serve as the primary test vehicle for our second-year demonstrations. This will require additional integration of sensing capability onboard, but could provide a complete end-to-end demo of the hospital assessment mission with a single robot. We therefore expect to use the Urbie through the duration of our contract (August 2000), and beyond that if successful partnerships with Part B contractors develop.