

Java Applications

CS4000 Section 003

Term: Summer 2, 2002

Project #3: CORBA interface for Robotics Lab

Introduction

You are required to build a CORBA interface for the CORBA objects already created at the AI Robotics Lab. The interface consists of a CORBA Robot object that receives requests from clients and sends them either to the Vision CORBA object or to the Motor CORBA object, depending on the type of request. You will also have to build a GUI client for the Robot object, that shows the image currently seen by the Vision subsystem.

Description

The system is composed of two parts:

1. a CORBA object, that acts as a server for requests coming from the clients, and forwards them to the subsystem that must serve them;
2. a GUI (and CORBA client) that allows users to request an image from the Vision subsystem and presents it on the screen.

The minimum requirement for the GUI is to provide a window containing an area where images coming from the Vision subsystem can be shown, and a button to request a new image.

The IDL interface of the Robot object must give access to the main methods provided by the two subsystems. The development of your project will have to be done in two stages. In stage 1, you will have to create the Robot object and the GUI. The Robot object will have no connection to the subsystems, yet, and will return to the client arbitrary data. For every request from a client, the Robot object will have to print to the screen information about the

request. Images can be sent to the client in form of sequences of octets. The Robot object will have to provide methods to retrieve an image, its width, and its height, as well as methods freewheel, stop, setSpeed, getSpeedL, getSpeedR. Freewheel and stop will take no arguments and return nothing; setSpeed will take two (Java) integers – corresponding to left and right speed – and return nothing; getSpeedL and getSpeedR will return a (Java) integer describing the current (either left or right) speed. In stage 2, you will add CORBA client capabilities to your Robot object, in order to forward requests to the subsystems. You can move to stage 2 only if the stage 1 project is working. You will have to send me your current stage 1 project (without documentation !) before starting, and will have to contact Todd Quasny (quasny@cs.ttu.edu) for information about the location of the NameServer. After you send me you stage 1 project, I will send you the IDL files needed to make the connection to the existing subsystems.