Computer Vision and Route Planning for Humanoid Robots

Brandon Rutledge  
Cleveland State University

Mike Iannica  
Cleveland State University

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Computer Vision and Route Planning for Humanoid Robots

Washkewicz College of Engineering

Student Researchers: Brandon Rutledge and Mike Iannicca

Faculty Advisor: Dan Simon

Abstract

Today humans control robots. Eventually, robots will control other robots. This research is a step in that direction. The goal of this research is to enable the NAO humanoid robot to take a picture of a VEX mobile robot and a colored cube, and analyze the picture so that the NAO can control the VEX to fetch the cube. The picture is examined by the NAO one pixel at a time. Using predetermined color values, the cube, along with the front and back of the VEX, are located, and the center points of each are calculated. The angle that the VEX needs to turn, and the distance that it needs to move, are calculated by the NAO. The NAO communicates this information to the VEX by a wireless remote control device which it manually manipulates. The VEX is programmed to receive input from the remote control and to determine from that input how it needs to move. Once the VEX reaches the cube, it closes its claw to retrieve the cube. The NAO then repeats the process, this time moving the VEX back to the NAO.