Mapping Robotic Movement to a Three-Dimensional Coordinate System

Craig A. Materick
Illinois Wesleyan University

Lon Shapiro, Faculty Advisor
Illinois Wesleyan University

Follow this and additional works at: http://digitalcommons.iwu.edu/jwprc

Materick, Craig A. and Shapiro, Faculty Advisor, Lon, "Mapping Robotic Movement to a Three-Dimensional Coordinate System" (1997). John Wesley Powell Student Research Conference. 33.
http://digitalcommons.iwu.edu/jwprc/1997/posters/33

This Event is brought to you for free and open access by The Ames Library, the Andrew W. Mellon Center for Curricular and Faculty Development, the Office of the Provost and the Office of the President. It has been accepted for inclusion in Digital Commons @ IWU by the faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.
Poster Presentation 33

MAPping ROBOTIC MOVEMENT TO A THREE-DIMENSIONAL COORDINATE SYSTEM

Craig A. Materick and Lon Shapiro*, Department of Computer Science, IWU

The Illinois Wesleyan Intelligence Network on Knowledge (I.W.I.N.K.) is a project to design and implement an artificial "person" named Shelley. Robotics, networking, and artificial intelligence will be the main topics of the preliminary work. For my research honors project, I designed the three-dimensional coordinate system in which the robotic arms move and interact with objects. The arms we have constructed are based on an arrangement of six servos, each of which rotate approximately 185 degrees. The program takes in data about the location of an object in three-dimensional coordinates and moves each of the six motors in the arm to arrive at that point. The mathematics involved is based on intersecting circles using the following equation:

\[(x - h)^2 + (y - k)^2 = r^2\]

Assuming the center of the circle is \((h,k)\) and the radius is \(r\); \((x,y)\) is a point on the circle – this is used for the intersection calculations.