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Mapping Robotic Movement to a Three-Dimensional Coordinate System

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Poster Presentation 33

MAPPING ROBOTIC MOVEMENT TO
A THREE-DIMENSIONAL COORDINATE SYSTEM

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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