ABSTRACT

The Indonesian Dance and Art Robot Competition (KRSTI) is a competition for the design, construction, and programming of robots that focuses on the use of Indonesian cultural elements in the creation of humanoid robots. In this competition, kinematics plays a crucial role in motion analysis, calculation, and robot control. However, the Badaya_SAS robot control system, which previously used R+ Motion software, is no longer compatible with the latest actuator configuration on the robot, so an alternative solution is needed to run the inverse kinematics control system in creating the robot's walking gait.

Based on this problem, a design for an inverse kinematics control system using the Robot Operating System (ROS) as a framework was created. ROS has many available libraries and modules for solving inverse kinematics calculation problems and ensuring that the solution applied is well received by the robot. This framework is also designed to be easily developed and programmed for additional features.

The result of this final project is a design for an inverse kinematics control system on the humanoid robot's legs using a kinematic solver to create the robot's walking gait. The control system framework is also designed using ROS, which can be applied and developed modularly for additional features in the future. This implementation ensures that the robot control system functions well and meets the goal of this final project, which is to design a flexible and easily developable control system.

Keywords: inverse kinematics, robot humanoid, walking gait, ROS.