

Thesis Title	Study Design and Prototype Parallel Robot For Artificial Jewelry Assembly Task
Thesis Credits	12
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Abstract

The objective of this research is to study and design Mechanical structure and Kinematic for a 5 axis robot, which suitable for Artificial Jewelry industrial, in Thailand. The research verified the proposed Kinematic model by simulating the model via Softmotion program. The research process consists of 4 parts, 1) check and compare different kinds of robot for Artificial Jewelry industry 2) Design Mechanical structure 3) Calculate and derive Kinematic model 4) Verify the model by running simulation and testing the prototype of robot arm. In the simulation the robot arm is programmed to repeatedly move back and forth to different target positions; 20 times for each target positions. The simulation results show negligible errors, the proposed model is, therefore, verified to be used in the prototype robot. However, the testing results on the prototype robot show more errors. The main cause of the error is the mechanical problem. Anyhow the researcher try to reduce error of robot arm by Inverst Jacobian method, the 1st result is X axis error decrease 44.876% Y axis error decrease 84.985% the 2nd result is X axis error decrease 94.94% Y axis error decrease 97.483%. The next research have to adjust Mechanical structure together with increase Repeatability.

Index Terms: Parallel Robot/ Kinematic/ Artificial Jewelry Assembly / Robot Arm