TRAINER SISTEM KENDALI FUZZY MENGGUNAKAN MATLAB WAIJUNG BLOCKSET BERBASIS MIKROKONTROLLER STM32F4

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ABSTRACT

Engineering and technology education has been considered a challenging subject in many higher education institutions because it involves mathematics and science as their basic concepts. This study aims to design a fuzzy control system learning trainer. The fuzzy control system is one of the important applications in the industrial world that must be studied in education because it can imitate human thought patterns with its IF-THEN thinking. In addition, the Fuzzy control system can also be developed into an adaptive and very flexible control to be combined with other artificial intelligence system algorithms, such as Neural networks and heuristic algorithms.

This research method uses technological development steps, such as Research and Development (R&D). The location of research was carried out in the Industrial Electronics Engineering Laboratory, Department of Electronics and Informatics Engineering Education, FT, UNY. The time of research starts from April to October 2022.

The research results are a set of AC servo motor trainers with industry standards and their practicum lab sheets. With hardware-in-the-loop (HIL) simulations and real electronics trainer kits, students have learning activities ranging from designing, implementing, and testing control techniques to DC servo motor applications. The research results show an increase in student competence using this learning strategy which is carried out by designing and evaluating control performance.

Kata Kunci: *Learning Trainer, Fuzzy control system, MATLAB Waijung Blockset, STM32F4 Microcontroller*