Pengembangan teknologi cerdas pengukuran jarak lintasan lari dalam test kesemaptaan jasmani kepolisian

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ABSTRACT

The background to this research is that at the beginning of January 2023, the research team was called by the Head of the DIY Regional Police Human Resources Bureau (Polda), which essentially said that the DIY Regional Police were experiencing problems when holding suitability tests for police candidates, or aptitude tests for promotions which are carried out every six months. The problem in question is that the measurement technique used for the DIY Regional Police's suitability test is still manual for all types of suitability tests. The fitness test consists of opportunity A, namely running for 12 minutes, and opportunity B, namely shuttle run, push ups, sit ups and pull ups. Currently, the Yogyakarta Regional Police is measuring the five types of fitness tests manually, namely by assigning each participant to a counter, jury or judge. This is very dangerous because the level of subjectivity and human error always haunts us. An error in measuring the opportunity test occurred in early January 2023. A participant in the opportunity test for promotion protested strongly against the jury because he felt that the jury's calculations and measurements did not match the feelings and confessions of the test participant.

Therefore, a technological solution is needed to measure and calculate suitability tests within the DIY Regional Police. Due to limited scope and funding, the research objectives are focused on: (1) developing intelligent measurement technology for the A fitness test, namely the 12 minute running test. (2) Increasing the accuracy of automatic calculations and measurements of suitability tests. (3) Supporting MBKM activities for students and lecturers working with the DIY Regional Police. The research method used to produce this new technology is the Research & Development spiral model as referenced by Cennamo and Kalk [1]. This spiral model consists of 5 D development phases, namely; (1) define, (2) design, (3) demonstrate, (4) develop, and (5) deliver. This smart technology based on GPS, RFID and IoT measures intelligently and accurately for each test participant (runner). IoT-based smart technology means that the start and off process will be carried out online and integrated for all test participants. This IoT-based smart technology will be able to detect the trajectory and distance traveled by each participant. All stakeholders involved (jury, person in charge of the fitness test, and participants) will be able to see data in real time and record the performance of each participant. This research will be carried out in parallel, namely in the Engineering Faculty Automation Laboratory, on the athletic field, and held jointly with the DIY Regional Police Human Resources Bureau.

It is hoped that this research can eliminate human error from judges and judgment, because all measurements and calculations of the track and running distance of each participant have been carried out automatically by machines. The accuracy of measuring and calculating the running distance for each participant is targeted at 100 percent when validated with manual tools. The output of this research is (1) appropriate technology that can be patented. The research results will also be published through (2) reputable international journal articles in the International Journal of Computer Science (Q2). This research can improve (3) cooperation between UNY, especially the Faculty of Engineering and Electrical Engineering Study Program, with the DIY Regional Police. It is very possible that the results of this research will be duplicated for all Polda nationally. This really has a very positive impact on UNY, because the results of lecturers' research can (4) increase income generating UNY as a PTNBH university

Kata Kunci: *assess, path, run, distance*