

SISTEM CERDAS PENGHITUNG OTOMATIS GERAKAN PULL-UP BERBASIS PENGOLAHAN CITRA

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ABSTRACT

The background to this research is that in early January 2023 the research team collaborated with the DIY Regional Police HR Bureau (Polda). The collaboration in question is to find solutions to problems when holding aptitude tests for police candidates, or aptitude tests for promotions which are carried out every six months. The problem in question is that the calculation 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. Chance test measurement errors are very likely to occur, because the human counting process is limited and fatigue in calculations easily occurs.

Therefore, a technological solution is needed to calculate suitability tests within the DIY Regional Police. Due to limited scope and funding, the research objectives are focused on: (1) developing an intelligent system that automatically counters the Pull-Up movement. (2) Increase the accuracy of calculations for the Pull-Up movement. (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 intelligent technology based on image processing measures intelligently and accurately for each test participant's pull-up movement. Intelligent technology based on image processing means that the start and off process will be carried out automatically and integrated for all test participants. This intelligent technology based on image processing 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. This research is to reduce human error from the jury 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. This really has a very positive impact on UNY, because the results of lecturers' research can (3) increase the income generating UNY as a PTNBH university.

Kata Kunci: *automatic counter, pull up, fit ness*