

**LEVERAGING POSE ESTIMATION FOR THE ANALYSIS
OF HUMAN POSTURE**

By

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12002016

BACHELOR'S DEGREE
in

Information Technology
Faculty of Engineering and Information Technology



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Revision after the Thesis Defense on 04 July 2024

STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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Human posture plays a crucial role in healthcare, sports, and rehabilitation, serving as one of the indicators of overall health. This research aims to develop an automated tool for human posture analysis using pose estimation technology, particularly leveraging the advancements in the You Only Look Once (YOLO) algorithm series, YOLOv8. The methodology involved training a model capable of recognizing additional keypoints beyond those provided by YOLOv8 pre-trained model, focusing on the back view of the human body. The Computer Vision Annotation Tool (CVAT) was used for data annotation, and training was performed using a dataset consisting of images of the human body, the model was able to achieve an accuracy of 82.72% in detecting custom keypoints. The developed web application facilitates user interaction, allowing for image uploads, keypoints adjustments, and posture analysis through the interface built with React JS and FastAPI. The system provides valuable insights into human posture by calculating angles and deviations from a plumb line created in the process.

Keywords: Human posture, Pose Estimation, YOLOv8, Computer Vision, Musculoskeletal Health.

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DEDICATION

I dedicate this to God, for His guidance
To my beloved family, for the encouragement
And to my friends, for their unwavering support

ACKNOWLEDGEMENTS

Above all, thanks to God for granting me the perseverance to undertake this research and to overcome all the challenges that came. Were it not His guidance and blessings, this would not have been possible.

I extend my deepest gratitude to my advisor and co-advisor, Dr. Ir. Heru Purnomo Ipung, M.Eng, James Purnama, S.Kom, M.Kom, M.Sc, for their guidance, insightful feedback and continuous support. Their expertise has been instrumental in the successful completion of this research.

I also wish to convey my thanks to all lecturers for their dedication to teaching and their passion for knowledge that have enriched my academic experience.

To my friends that I am incredibly grateful to have, your companionship and support have been a source of great comfort and motivation through this research.

Finally, I would like to thank everyone who has contributed to this thesis work, directly or indirectly. Your contribution has been essential, and I am deeply appreciative for all the help I have received.

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