

**AUTOMATIC WARNING SYSTEM TO PREVENT COLLISIONS
AND PROVIDE A SAFE DISTANCE BETWEEN HEAVY DUTY-TRUCKS**

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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

AUTOMATIC WARNING SYSTEM TO PREVENT COLLISIONS AND PROVIDE A SAFE DISTANCE BETWEEN HEAVY DUTY-TRUCKS

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Heavy equipment operating in mining areas is heavy duty-trucks, which function as a means of transporting material over short to long distances. Operating and producing on target is the core goal, but safety is a key factor in achieving it. See the safety performance statistics on one of the customers of PT United Tractors Tbk. the data obtained that work accidents due to unsafe conditions and unsafe acts continue to increase every year, including collisions between heavy duty-trucks caused by the operator's lack of anticipation in maintaining a safe distance while driving. This causes a loss of production time due to the collision accident investigation process and the emergence of the need for impromptu equipment repair costs. If the accident causes the fatality, the government can revoke the mining operation permit and harm many parties. Based on this, researchers need to develop technology-based tools that can prevent collision accidents in mining areas. In general, the working mechanism of the developed tool uses a GPS (global positioning system) to read the position of the heavy duty-trucks against the satellite, and then translate it into a location on the earth's surface in the form of longitude, latitude, and altitude data. This data is sent to other heavy duty-trucks using radio frequency signals via LoRa (Long Range). The operator can see the distance between heavy duty-trucks while driving and a warning sound will activate automatically when an unsafe distance between heavy duty-trucks is detected. Distance data will be stored in a memory card and can be downloaded wirelessly using a web server to be followed up in the coaching process by supervisors regularly.

Keywords: heavy equipment, heavy duty-trucks, unsafe acts, anticipation, collision, safe distance, global positioning system, long-range, wireless

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DEDICATION

I dedicate this study to my beloved family, UT School, and PT United Tractors Tbk.
Allah gives me everything.

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