

Investigation on the Behaviour of Weapon Positioning System on Volatile Warship

Combat Management System, CMS is very important for military ships in order to monitor and control the equipment where stability is one of the most important requirements. Many researches have been conducted on weapon control module to achieve accurate and precise shot. Electromechanical analog ballistic computer has been used for accurate firing solution that could automatically control fire guns. Considering static ships, the existing controller has high degree of accuracy but the performance may deteriorate for moving ships that are affected by disturbances. This research has partly solved the issues of stability volatile ship for military application. As a step in developing a control system that is stable and robust toward disturbances with high degree of accuracy, a mathematical model of volatile ship has been developed using System Identification. The developed mathematical model has been tested and verified using the data obtained from the small ship prototype. Results showed that the curve fit achieved 70% accuracy. For future improvements, robust control has been proposed to achieve stability of weapon control module. Quantitative Feedback Theory, QFT could be used to design the robust controller for the weapon control module and the movement of the ship is considered as uncertainty. With pre-defined specifications, the designed controller would be robust for the specified uncertainty range. The mathematical model of the weapon module has been designed and developed by Muslim engineers, the novel weapon control module is considered as part of the contributions of the Islamic civilization to humanity.

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