Abstract

Kinematics is one of the difficult subjects for engineering students. This difficulty is partly due to the difficulty of visualizing various movement mechanisms that occur in a mechanical structure. This movement mechanism is influenced by both the type and characteristic of the joint used. This article contains the results of applied research in developing simulation software that can simulate various kinematic movement mechanisms according to the type of joint used. This research uses a positivism research approach because it is based purely on facts. The quantitative method as one of the typical methods in the positivism research approach is selected. Its stage includes identify a problem, literature review, specify a purpose, collect data, analyze data, and report. In the collection and analysis stage, the interview is done to find more information on the model of kinematic joint motion. A functional and non-functional requirement is formulated in this stage. In addition to the system is modeled using the Unified Modelling Language (UML) tool and object-oriented approach is taken to implement the model. Manual testing is used to test this software based on test cases to develop previously. The final outcome of this research is a mobile app as a software simulation tool for kinematics education.
is resulted.

References

1. Jens Witenburg Kinematics Theory and Applications (springer)
2. Kuang-Hua Chang 2013 Product Performance Evaluation with CAD/CAE
3. Adrián Peidró, ´Oscar Reinoso, Arturo Gil Jos´e M. Mar´ın, Luis Pay´a 2016 A Simulation Tool to Study the Kinematics and Control of 2RPR-PR Parallel Robots ScienceDirect-Elsevier
4. Stephen M. Kengyelics, Laura A. Treadgold, Andrew G. Davies 2017 X-ray system simulation software tools for radiology and radiography education Computers in Biology and Medicine Journals
5. John Dudovskiy 2016 eBook - The Ultimate Guide to Writing a Dissertation
6. Abraham Fischler 2015 Quantitative research methods (southwestern university-USA)

Index Terms

Computer Science Software Engineering

Keywords

Kinematics, simulation, mechanical structure, joint, UML