Modeling and simulation using Matlab/Simulink and its applications in The Electric Power Steering system in VIOS.

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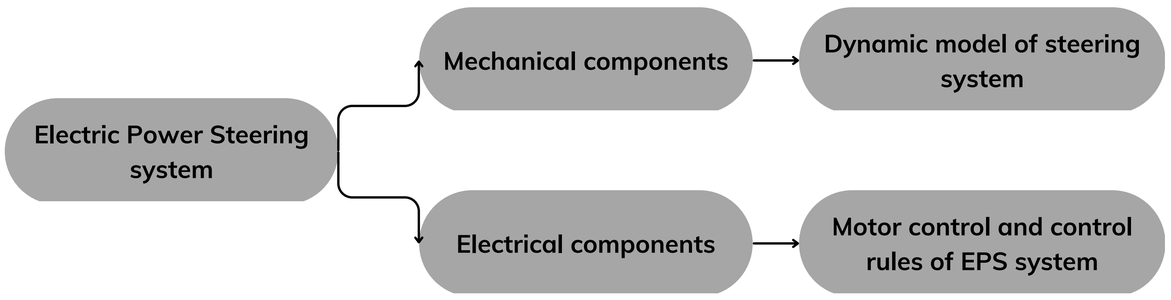
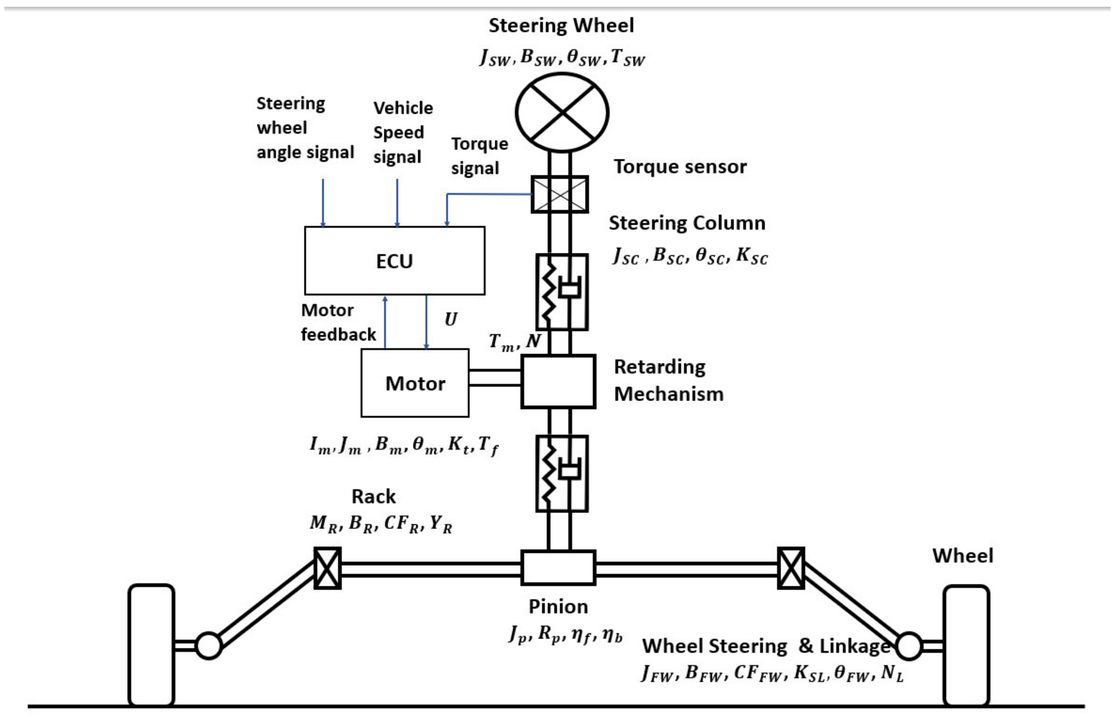
1 Abstract

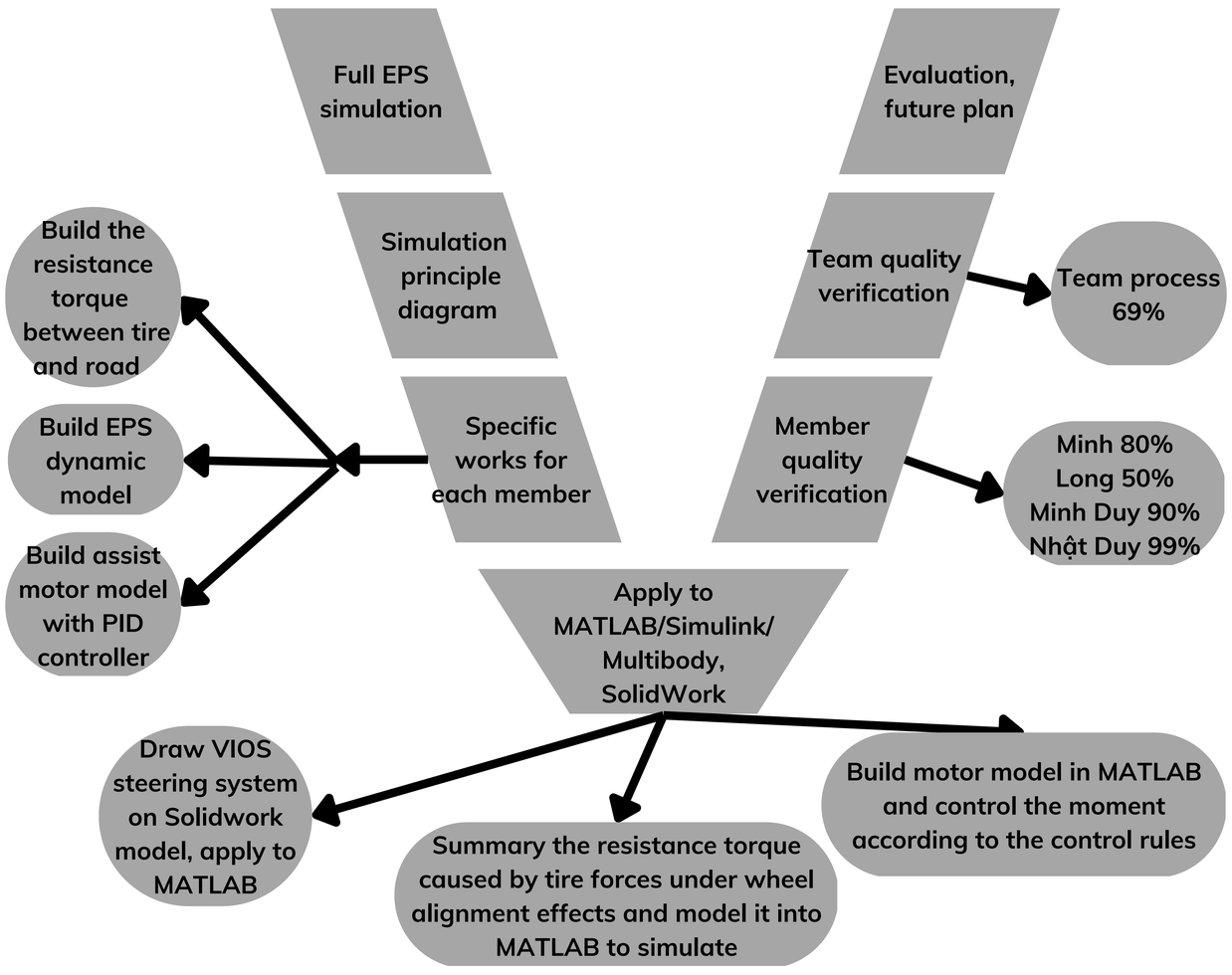
This paper presents a complete vehicle dynamic steering of Electric Power Steering system which includes the interaction between tire forces and road through the resistance torque, summary the dynamic model of mechanical components in this steering system, then simulating using Simscape and Solidwork software and the control strategy of the assist motor for the driver in different driving conditions.

2 Method using in project





3 Operating process diagram



4 RESULT UNTIL NOW:

No.	Works done	Required results	Actual results	Degree of completion (0-100%)
1	Dynamic equation for EPS	Equation	Equation	100%
2	Solidwork model	Full model	Part of model	50%
3	The resistance torque model between tire and road	Full model	Full model	100%
4	Study on theory of automatic control system	Full model	Full model	100%
5	Build assisting motor model and control of motor's moment in MATLAB	Full model	Full model	70%
6	Calculate and determine control rule of EPS system	Full model	Full model	70%
7	Build simulation model of control rules of EPS in MATLAB	Full model	Full model	50%

5 Team member:

No.	Member's full name	Works assigned
1	Trịnh Tiến Long	Summary the dynamic equation, simulate using simscape multibody
2	Hồ Bình Minh	Summary the resistance torque theory between tire and road and model them into MATLAB
3	Đặng Minh Duy	Simulation of control of assisting motor and control rules of EPS according to the operating conditions of vehicle speeds and steering wheel's angles
4	Nguyễn Nhật Duy	Simulation of control of assisting motor and control rules of EPS according to the operating conditions of vehicle speeds and steering wheel's angles

6 Acknowledgement:

This research is funded by Office for International Study Programs (OISP), Ho Chi Minh City University of Technology (HCMUT), VNU-HCM under grant number SVOISPLV-2022-KTGT-30,SVOISPLV-2022-KTGT-31,SVOISPLV-2022-KTGT-32. We acknowledge the support of time and facilities from HCMUT, VNU-HCM for this study.