Experiment

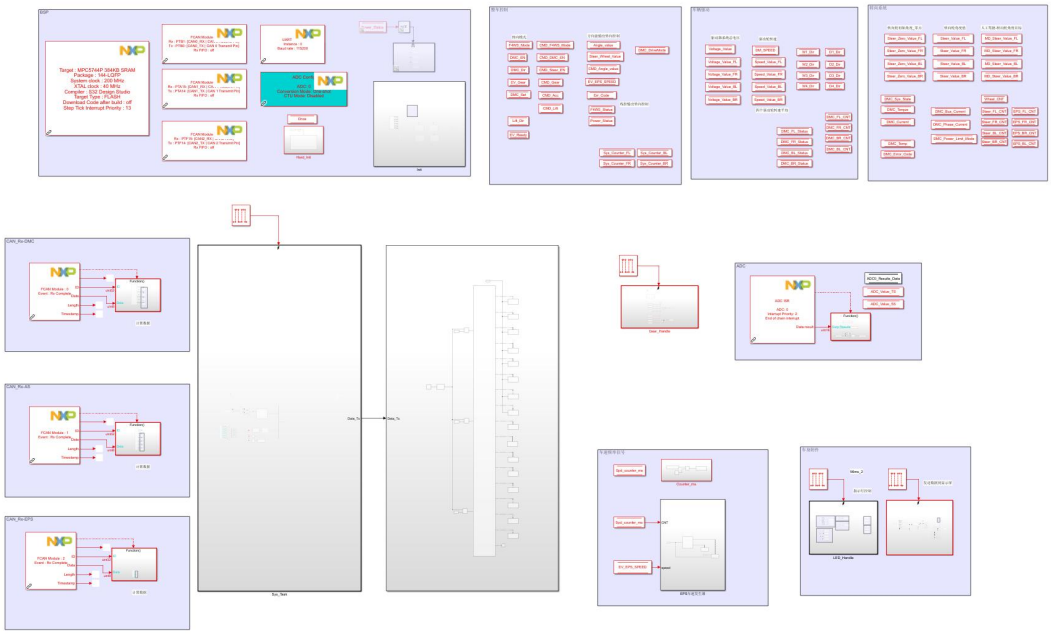

Fig. 1. Simulink program diagram of the electric forklift.

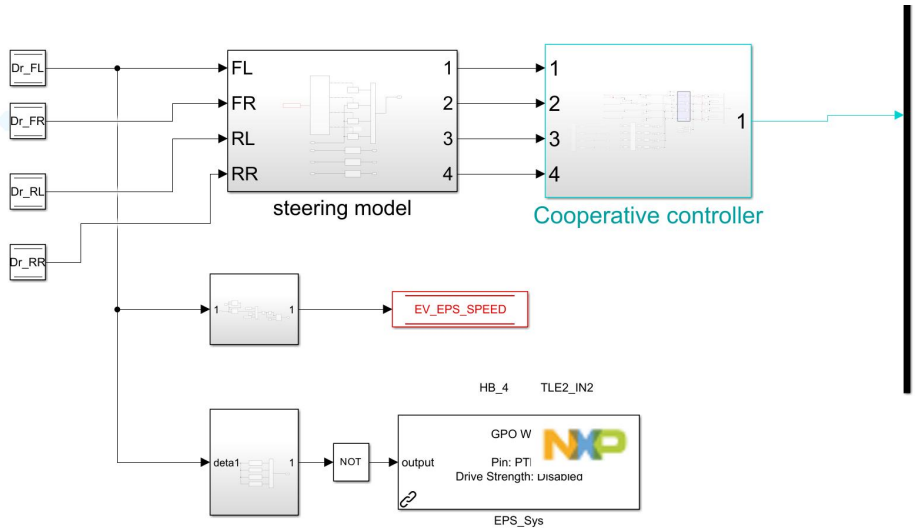

Fig. 2. Simulink program diagram of steering control.

Fig. 1 presents the Simulink program of the electric forklift. The cooperative control strategy proposed in this paper is integrated into the wheel steering section of the program. Fig. 2 shows the steering module after incorporating the proposed cooperative control strategy.

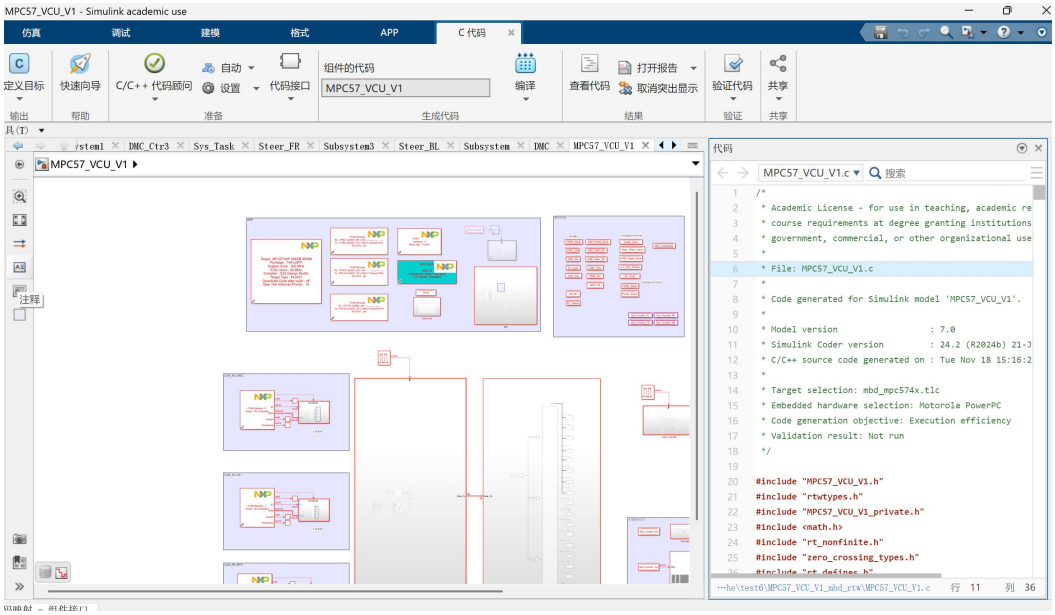

Fig. 3. Conversion of the Simulink program into C code.

As shown in Figure 3, the Simulink program with the integrated cooperative control strategy is converted into C code.

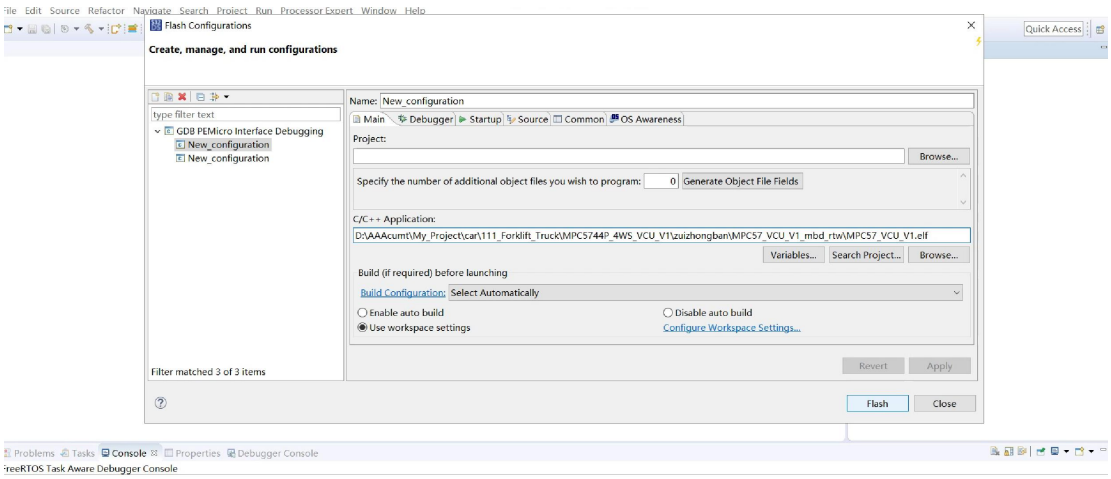

Fig. 4. Program flashing.

As shown in Figure 4, the program files generated from the C code are flashed into the electric forklift using the S32 Design Studio software.

Fig. 5. Data acquisition through LabView.

As shown in Figure 5, vehicle information such as wheel steering angles and vehicle speed during operation is recorded via a LabView program based on CAN communication, enabling analysis of the cooperative control strategy proposed in this paper.