SUMMARY

The goal of this thesis was to enhance the Taltech iseAuto Master Controller to support the USB protocol functionality. This added functionality at the level of the software was to enable the controller to be connected to a computer system.

The current solution, which consists of using a USB-CAN adapter to connect the controller to the computer was examined and found to be expensive and unnecessary since the controller has an onboard USB port. Different user interfaces were considered for the new solution such as terminal application, SavvyCAN GUI, web browser using the WEBUSB API. SavvyCAN was chosen because it is the most advanced open-source application I could find.

The thesis also briefly looked at the device enclosure material selection and design. Based on the analysis with EduPack heat resistant Polylactic acid polymer was found to be most suitable but Polylactic Acid (PLA) was used in printing of the enclosure.

Overall, this thesis achieved most of its goals though some of them at the basic level such as the material selection of the device enclosure and implementation of the USB protocol. The sending of CAN frames from a CAN bus to the SavvyCAN GUI was tested and working successfully. Also, CAN frames could also be sent to the device, which were then sent over the CAN bus to an ECU. Since messages can be sent from the GUI, the message IDs could be used to select which CAN messages to filter out from an ECU. This thesis laid the foundation work that could be built upon to transform the device into a industry grade CAN bus diagnostic tool. The messages could also be sent to MATLAB and be used as input for MATLAB simulations.