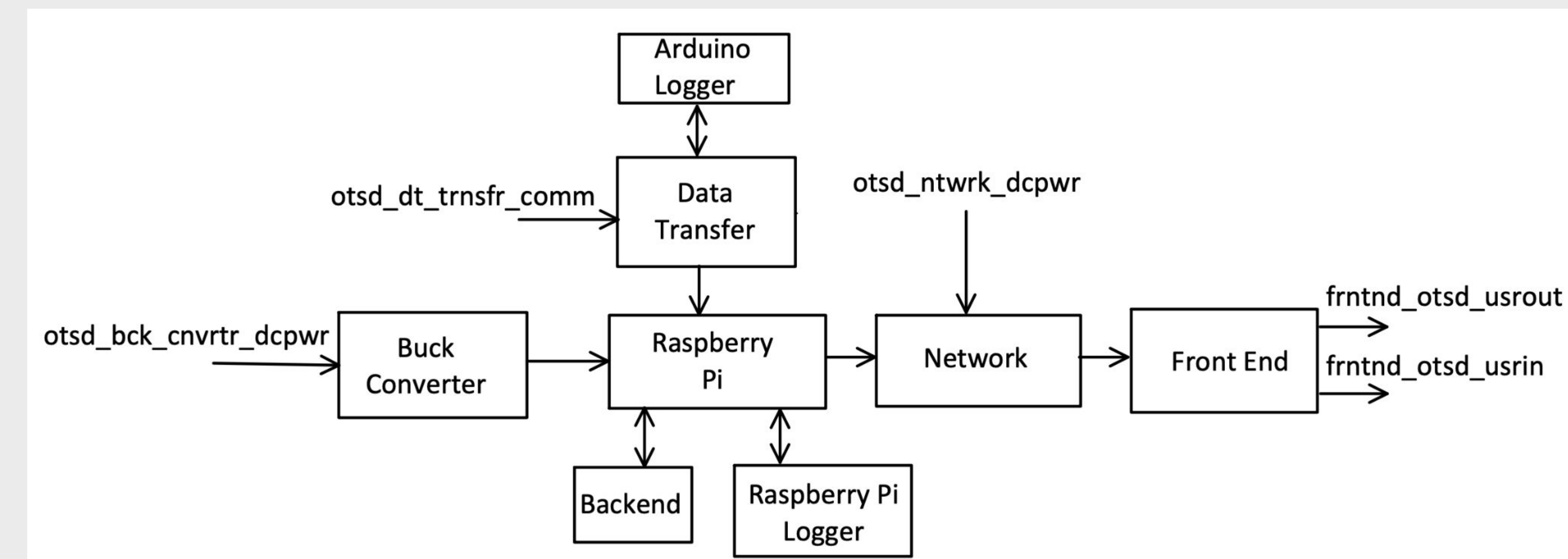


Engineering requirements

- CAN Bus Translation - The system will take data from the CAN bus and display it in an easy to read format
- Connection Speed - In order to share live data so that it can be useful during a race, the system must be able to transfer that data quickly.
- Connection Strength - At times the car may be out of sight. Being able to view the connection strength is important for monitoring data integrity.
- Data Access - The system will be able to display data to multiple users at the same time.
- Data Selection - Users will be able to view telemetry data in a customizable display.
- Due Date - The system will be ready for GFR by spring break, so that there is ample time to integrate our system with the car.
- Range - The car won't always be right next to the users. Because of this, the system will be able to present data at least 50 M away.
- Transmission Light - In order to validate the system is functional without the GUI, there will be a status light to indicate that data is being sent and/or received.

GFR-SAE: Live Telemetry

Networking and streaming for live telemetry of the 2024 car



Intro

The purpose of this project is to create a system that can display telemetry data remotely from the team's car. In order to do this, the system must gather the relevant data from the CAN bus, manipulate the data so that it can be displayed to a group of users, and display the data remotely using a network. To manage our server we are using a Raspberry Pi. This server is connected to an Arduino with two CAN hats that interface with the car's CAN bus. These two systems in tandem are connected to a local network that can be accessed via the wireless access point on the car.

Block Diagram

- Data Transfer - A combination of CAN hats and an Arduino that read data from the car and transmits it to the car.
- Front End - Wepage for data viewing and download.
- Back End- Accesses data stored and sends it to the front end.
- Network - A wireless access point used to connect to the server that is on the car.
- Buck Converter- Converts supplied power from 12 volts to 5 volts.
- Raspberry Pi - Hosts the CAN data server
- Raspberry Pi Logger - Logs CAN data from Arduino into the server

Design Details

- Utilizes a WLAN allows users to view and access vehicle telemetry data.
- CAN data is converted from its analog form into a more suable digital frmtat where it is then stored locally



Team photo Here

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