

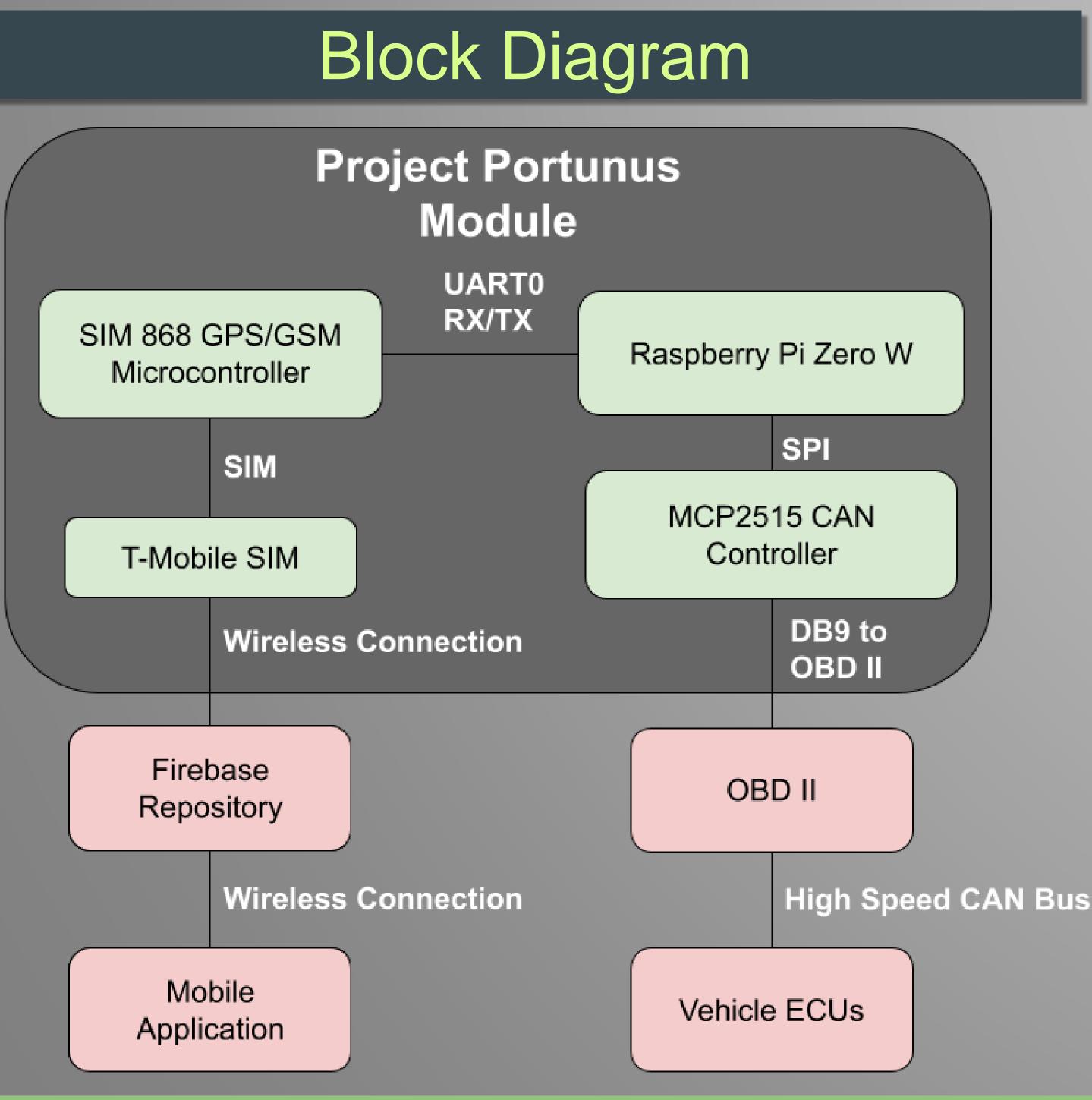
Project Portunus

### Background

Today, modern vehicles include partner apps as a solution to car keys and to control the vehicle. Currently, there is no universal standard or product to implement such app based control in other vehicles. Project Portunus seeks to fill in this gap by providing vehicle control, GPS tracking, and diagnostic read out via a Raspberry Pi based module with Android app based integration.

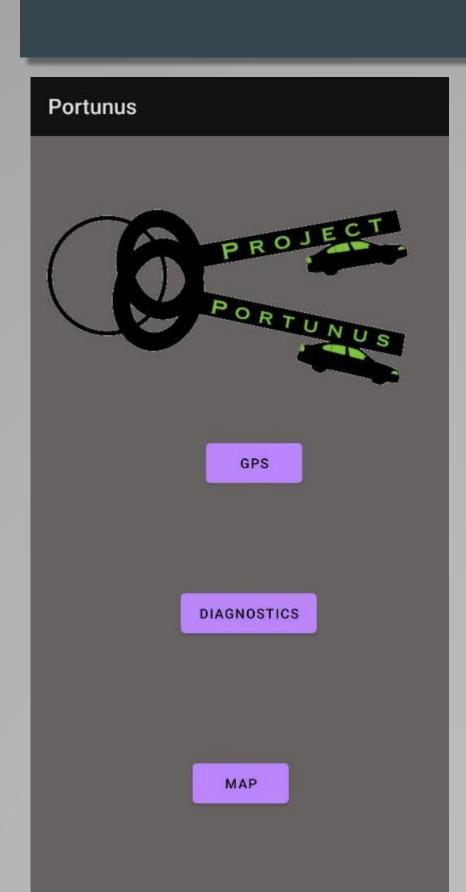
## Overview / Design Specs

- Real-time data is stored on the server and the car's location history can be tracked in the phone app
- The module reads CAN messages from the car and sends them to the server via cellular network
- The application receives the data from the server and displays diagnostics in real-time



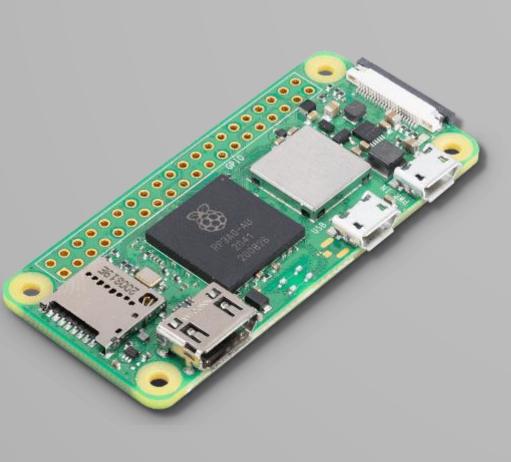


### Project Portunus: Universal Car Module Nazar Rybii Charanpreet Singh Matthew Aragaw Noah De Los Santos Final Product Mobile App **GPS** Coordinates Portunus GSM/GPRS/GNSS HA air{34.4162023 -119.8481601} air{34.4171649 -119.8481456} Top View air{34.4180453 -119.8482244} Pair{34.4187233 -119.8481735} air{34.4190832 -119.8476711} Pair{34.25076814 -119.50886171} GPS DIAGNOSTICS Side View MAP OPEN MAP The module sends diagnostic and GPS data to Firebase which is retrieved and displayed by the partner application GPS Key Hardware **Raspberry Pi Zero W** Vast accessory/Hat support Python Support • SPI, UART interfaces • Low power Custom PCB and the second • CAN controller/transceiver The module sends GPS data which can be viewed in a Decode and transmit CAN Google Maps interface in-app messages Conclusions Powers module over DB9 port The universal car module allows users to access diagnostic data such as the gear and RPM. It also allows users to **GSM/GPRS/GNSS** Hat locate their car using the integrated GPS and is powered by Provides GPS tracking the car's OBD II port even when the car is off. Controlling • Wireless access for data



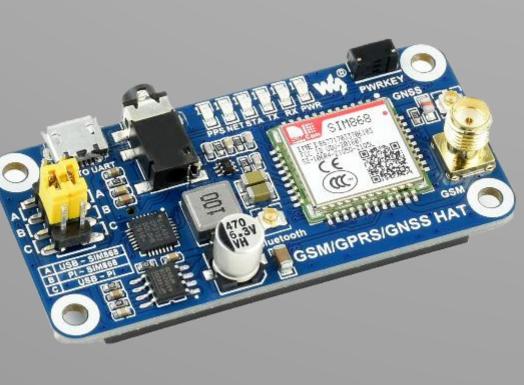
Diagnostic Data		
RPM 636	PRNDL P	Of
644	Ρ	Of
651	Р	Of
645	Ρ	Of
643	Р	Of
1612	Ρ	Of
3756	Ρ	Of
1705	Ρ	Of
670	Р	Of
646	Ρ	Of
628	Ρ	Of
628	Р	Or
689	Ρ	On









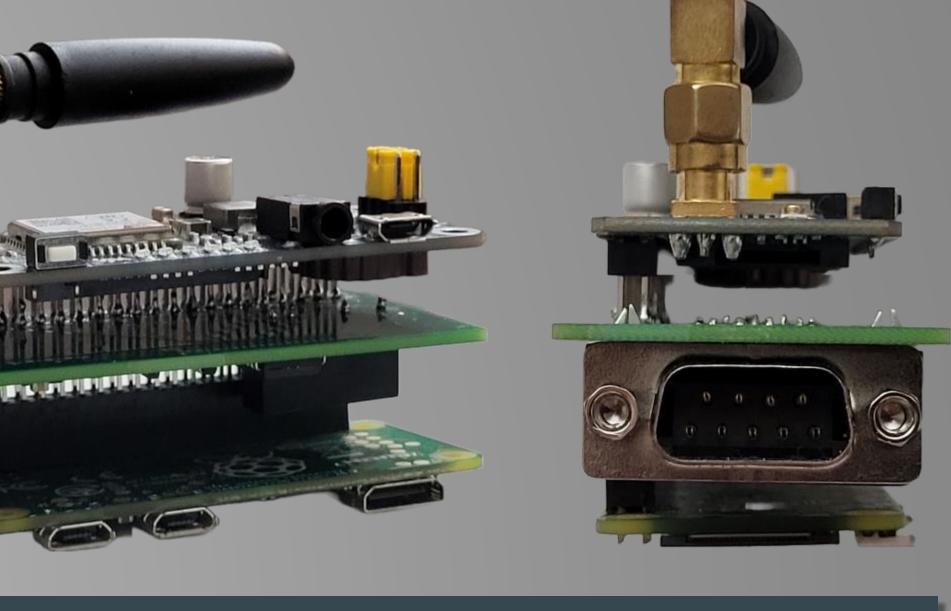


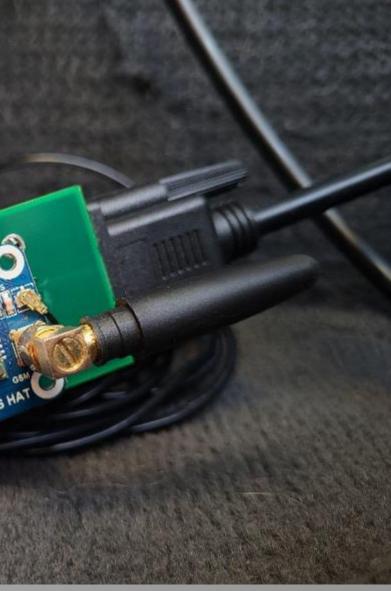
Special thanks to Chad Spensky, Evan Blasband, Yogananda Isukapalli, Chris Cheney, and Brycen Westgarth

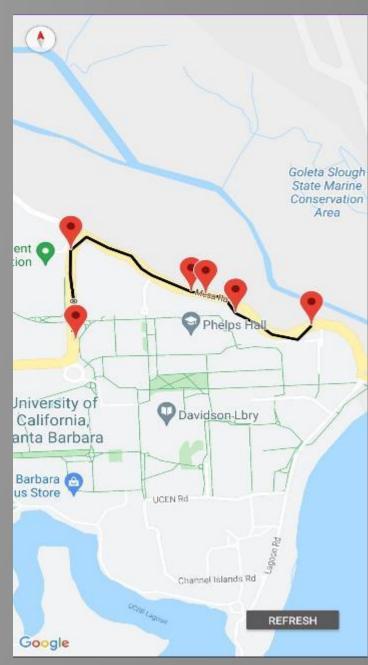
uploads to Firebase











power locks is limited to a few manufacturers, primarily Ford due to lock integration in the car's CAN bus network.

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