Exploring the Heavy Vehicle

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NMFTA National Motor Freight Traffic Association, Inc.

THE UNIVERSITY of TULSA Student CyberTruck Experience

Custom Made PCBs and CAN Tools

- Altium PCB design software training
- Rapid prototyping
- Cost analysis
  - Hand soldered through hole components
    vs surface mount components
- GUI Development
- Open source on Github

Students are encouraged to produce their own open source devices. Students design devices to accomplish a specific task within their projects and are encouraged to expand their devices maximize the future functionality. These devices can be used for everything from CAN bus research to digital forensics.

Teensy 3.6 Micro Controller

Beagle Bone Black
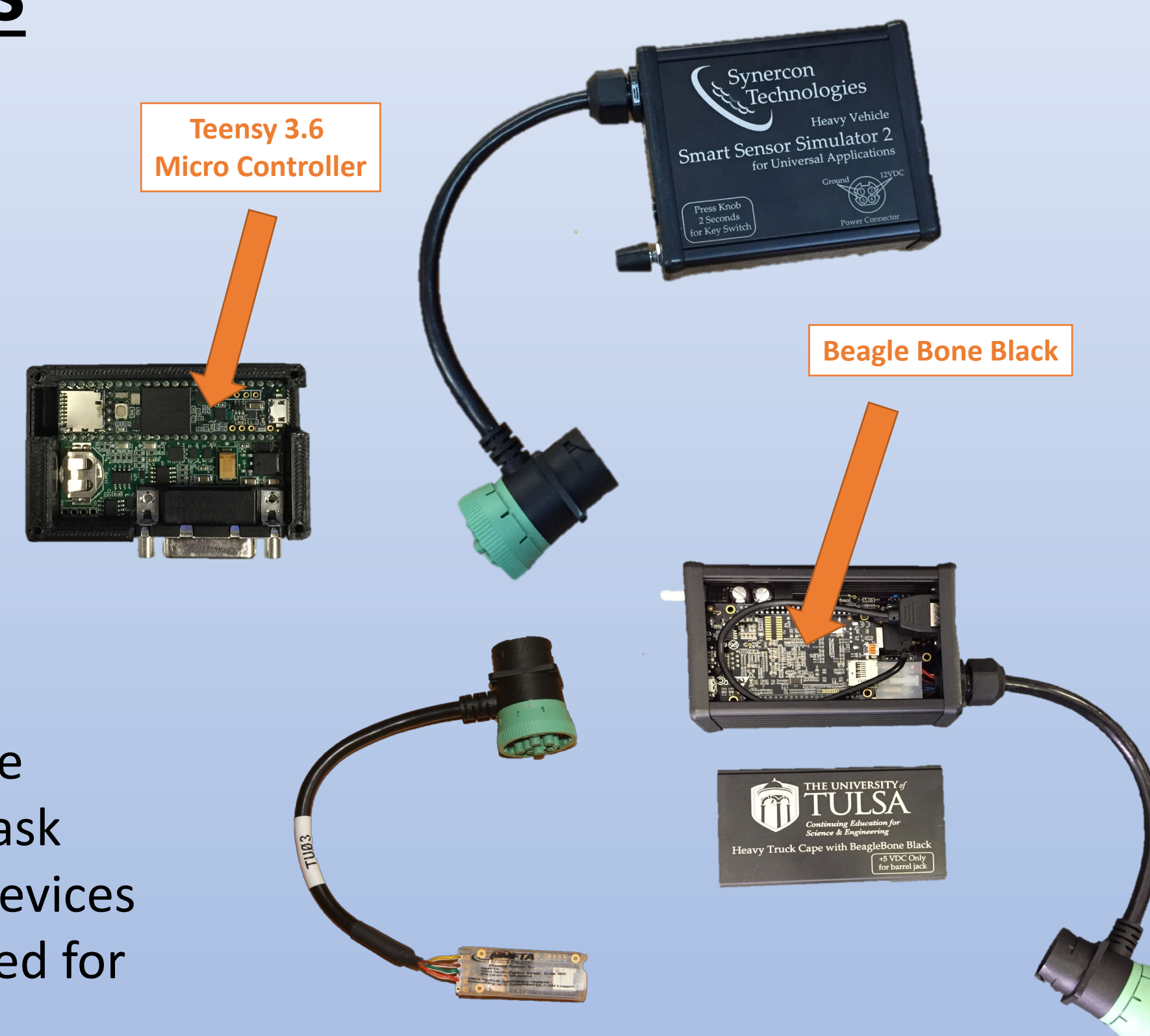
Reverse Engineering

- Learning how chips interact with each other on the board.
- Pulling chips and reading memory
  - Digital Forensics
- Using Open Source Tools
  - Bus Pirate
  - JTAGulator
- Dissecting OEM software
- Exploring to learn more!
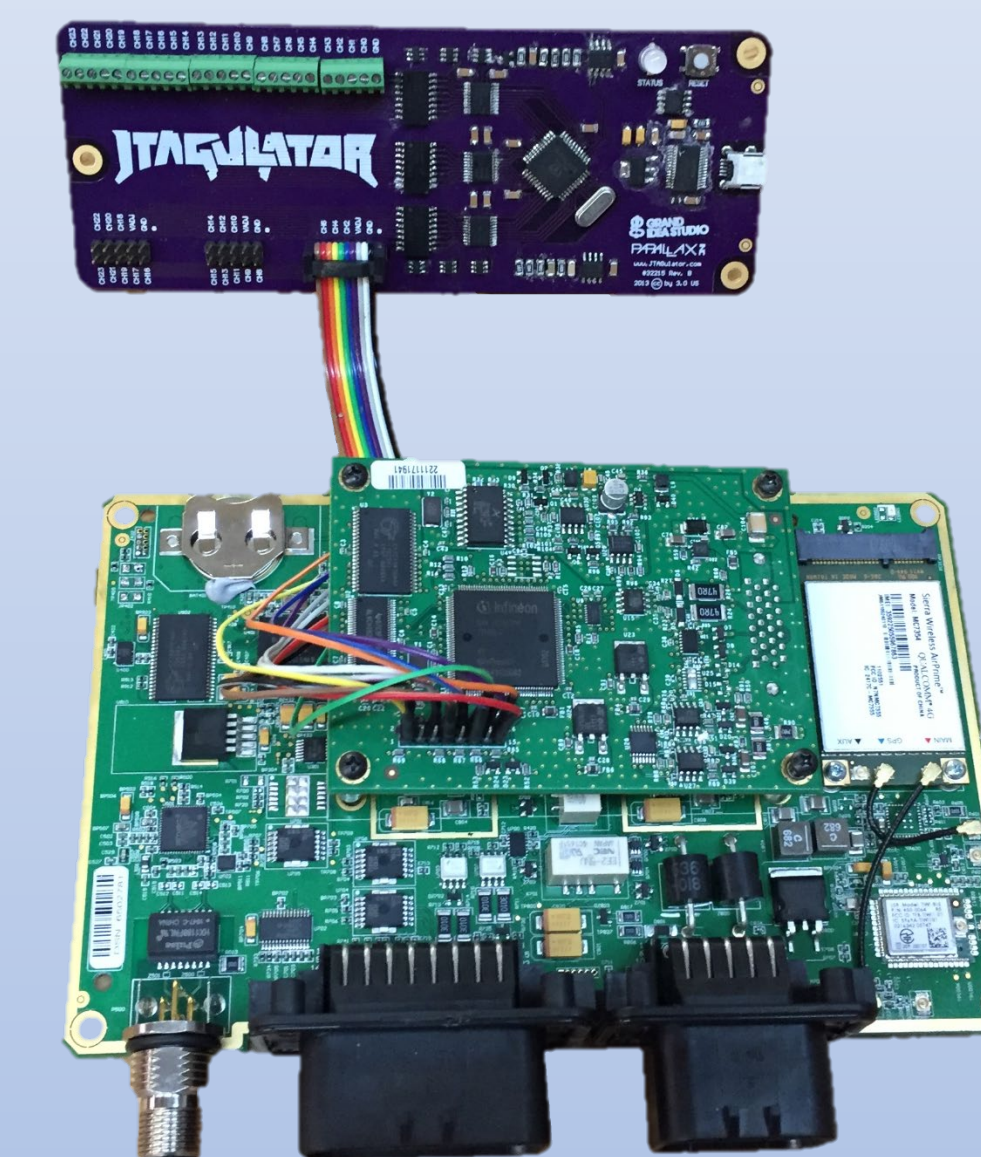
As our students grow in their development, they are pushed to dive deeper into the circuit board to gather a better picture of how chips interact. One method is spying on the SPI bus with a Bus Pirate to determine when chips are being activated. Furthermore, students are granted the opportunity to bypass security settings to learn more about data transfer between chips on the boards they are working with.

Cyber Physical Systems

- Introduces students to physical components.
- Allows for interaction with truck components.
- Teaches students how cyber systems affect the truck operation.

An important part of our program is establishing the connection between the physical components and the electrical systems that control them. Students make the connection between their research and how it effects the physical system it controls. Understanding the factory capabilities of a device is key in finding unintended ways the system can be explored. Internal diagnostic processes are necessary for testing the functionality of components.

PEOPLENET A TRIMBLE COMPANY

GEOTAB management by measurement