

Christophe Lower

Alexandre Lord

Aaron Wilkins

SAE BAJA :
ACQUIRING CRITICAL
DATA

Objective

- Develop a low cost, expendable and easily maintainable acquisition system for the Concordia University SAE Baja.

Proposed Solution

- ④ Use a PIC24 to:
 - Record temperature using an analog port.
 - Record speeds using external interrupts and a timer.
 - Present data to driver with an LCD.
 - Log data to an SD card.

Temperature

- Prevent overheating of CVT transmission
- uC interfaced with an LM35 sensor using 10-bit ADC
- The range of the LM35 sensor is more than enough (+155°C)

Engine RPM

- Uses an external interrupt counter (500ms)
- Calculates speed using Timer1
- Hardware: Reed switch + magnet
- Disadvantage: Lack of precision
- Solution: Average value over time period

Display

- ⦿ LCD (for now)
 - 4 bit parallel bus (less I/O expensive)
 - Easily implemented
- ⦿ 7-Segment Display (Future)
 - More robust
 - Much more wiring

Logging

- ◎ SD card
 - SPI Interface
 - Cheap and large memory
 - FAT16
 - Library available from Microchip
 - Faster development time
- ◎ Wireless (Future)

Questions?