Embedded Micro-Controller Design for Intelligent Tire

Overview
The problem for our project is to develop and embed a signal processing algorithm that will provide and analyze real-time information of road conditions in order to optimize performance of other vehicle control systems. The real time information includes parameters such as tire pressure, tire condition, friction potential, tire forces, tire slip and road condition.

Objectives
Our design objective is to convert a MATLAB generated algorithm into C-compiled code. The code must also be successfully integrated onto a microcontroller in order to provide accurate real-time tire and road data analysis.

Approach
- Take given MATLAB script and rewrite algorithm in ANSI C
- Compile the program under CodeWarrior
- Burn code onto chip via RS-232 serial cable
- Test data samples provided by Goodyear
- Compare C output to MATLAB output
- Send .txt output back as a graphical waveform displayed on MATLAB

Outcomes
- Implemented peak detection algorithm onto a microcontroller which may aid in the safety of vehicle control
- Able to determine peaks and troughs generated by tire data. This information can be sent to other systems within the vehicle for further drive enhancement