D.A.T.A Suspension System

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What is DATA Suspension Systems?

- DATA Suspension System is an air suspension system designed to automatically facilitate smooth riding and prevent damage to the body/frame.
- The acronym DATA stands for Dynamic Automated Tuning Air.
- The automated feature is theoretically implemented with use of sonar detection and height sensors.

Applications

➢This air suspension system is geared toward passenger vehicles but can be expanded to all vehicles.

➢Here are some key advantages of the system:

- Road Obstacles (prevent vehicle damages)
    - Steep driveways, speed bumps, parking curbs
- Safety
    - Reduce rollover risk, change overall aerodynamicity

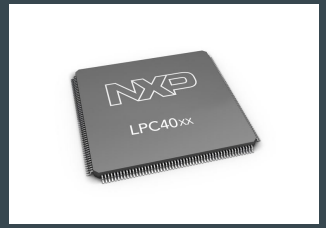
How it Works

1. Data is fed from the sonar to the computer in real time to detect the presence of bumps or pits ahead of the vehicle.
    - Sonar is better than an infrared sensor because vehicles are susceptible to debris

2. At the same time, data from the height sensor is used to detect how high the car is suspended.

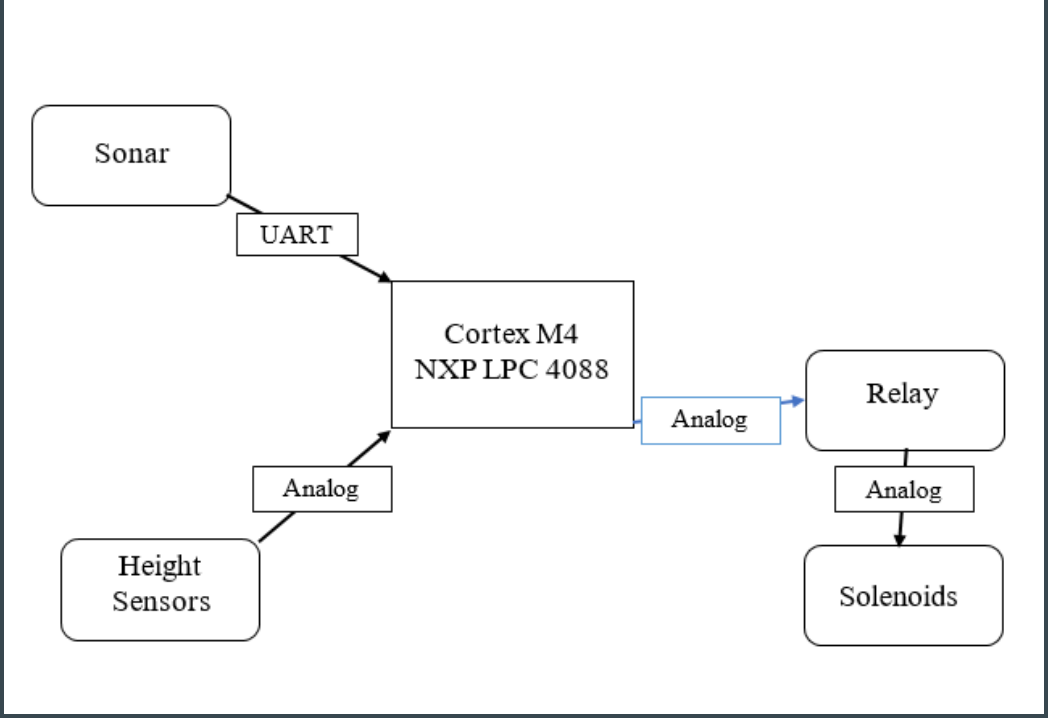
How it Works

3. Together, the processor uses these two data to judge whether more suspension or less suspension is desirable



4. To adjust the suspension, the processor sends a signal to solenoid valves which open or close, inflating or deflating the airbags

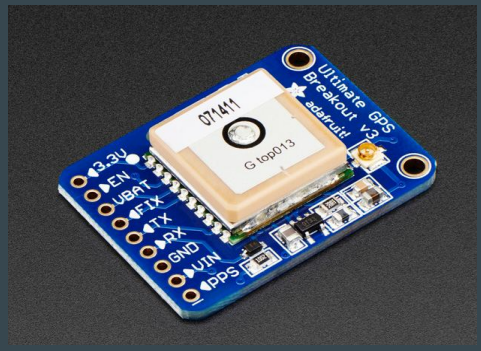
Future Improved Block Diagram



For Future Design

➢GPS

- Incorporate a GPS that will measure current vehicle speed and global positioning
- Can use the current speed to determine whether the suspension system will be adjusted automatically or manually
- Can utilize the global positioning system to indicate locations of speed bumps and their recommended height adjustment



For Future Design

➢LCD Screen

- Having a LCD screen to display the current suspension levels
- A LCD screen also provides visual feedback from the board to the users

Advice for Future Engineers

- Double to Triple Check
  - Always check the datasheet of each part and make sure it is compatible and within desired specifications
- Don’t Lag Behind
  - Always try to follow the Milestones/Checkpoints because time is limited and never regained
- Redundancy is Vital
  - Plan A usually never succeeds, so setting up backup plans is key in continuing the project

Special Thanks

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