

LIN – Local Interconnect Network

Communication between Arduino
Ecosystem via LIN Bus

Brainstorming

Brainstorming

- * Networks → Networks in Automotive Electronics → Increase of demand & usage
- * Features with
- ↳ safety
 - ↳ comfortability
 - ↳ cost

Why LIN better over others? LIN's Competitive Advantage

Speed, Reliability, etc.

LIN Media Access

Master-Slave Strategy (tasks)

LIN Frame Format

- ↳ master tasks compose header
 - break field - sync byte
 - Identifier as unique node Address
- ↳ Slave tasks
 - 8 data fields
 - Checksum fields

LIN Frame Timing

- ↳ Timing & Timing Tolerances to LIN nodes to work
- ↳ Time Drifts
- ↳ Reserved Master Nodes
- ↳ Percentage Tolerances for diff. Events.

LIN Schedule Tables

- Table →
- boundaries
 - behavior - requirements
 - variable scheduling

HANDS-ON - APPROACH

Initiation

↳ Simple "Hello World" b/w Master - Slave - Node

Sketch

For a 2-3 Slave with Master like a Blue-Print

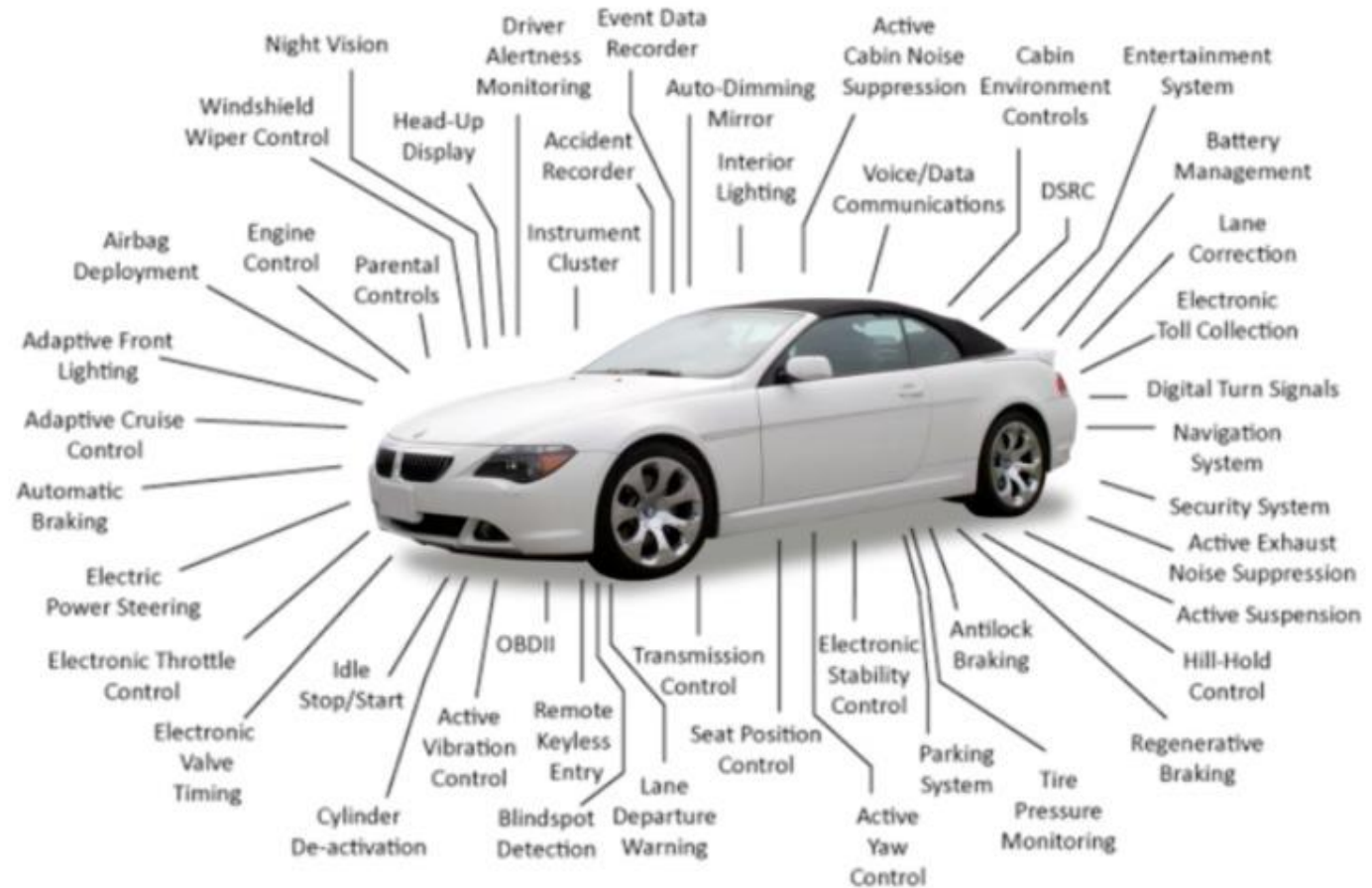
Components Requirements

- At Mega (Arduino Board)
- MCP2004 (LIN)
- Wires - Push button
- 12V Power - Oscilloscope
- Mini-Breadboards
- Items on demand of Situation

Software/Code Flow

Final LAB Implementation.

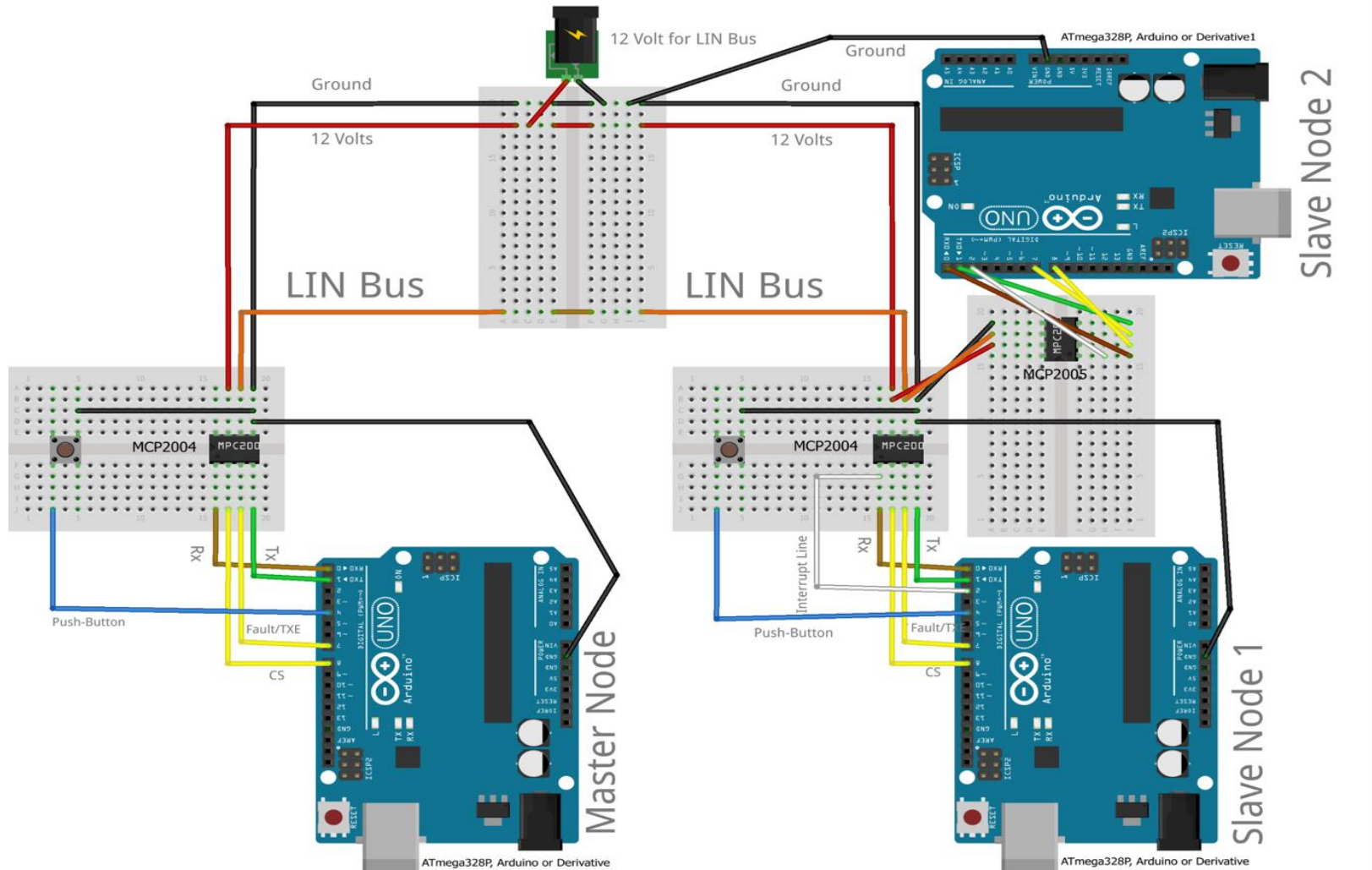
Automotive Electronics



-Since the knowledge of network design is increasingly popular especially in the cyber-physical systems, the use of networks in automotive industry to increase and modify vehicle features (wiper control, airbag, door lock, etc.) are realized over networked electronic components and software.

-These innovations are implemented by tapping in information from actuators, sensors, and ECUs via networks. Correctly applied network technologies can be used to increase comfort and safety while keeping the cost low

Hands-On Approach



Taking the low cost, longevity, safety and security in prime consideration, LIN (Local Interconnect Network) deals with sensors and actuators with very low cost of installation. As a hands-on development project, an arduino ecosystem will be demonstrated with one master node three slave nodes will exchange data via the LIN Node. Additionally, with the help of push buttons integrated on the master-slave nodes we can display LIN frame transfers on the oscilloscope.