EECE 401 Senior Design II
Department of Electrical and Computer Engineering
Howard University

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EcoCar Team 2 (R.E.V)

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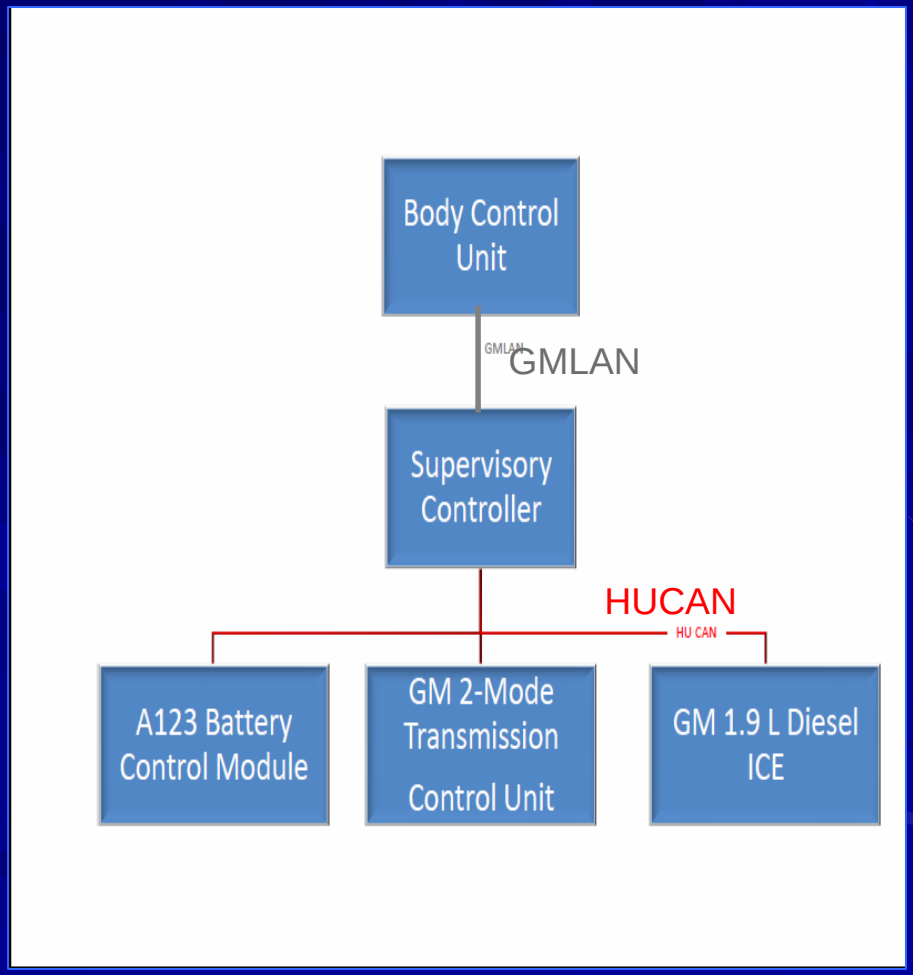
Introduction

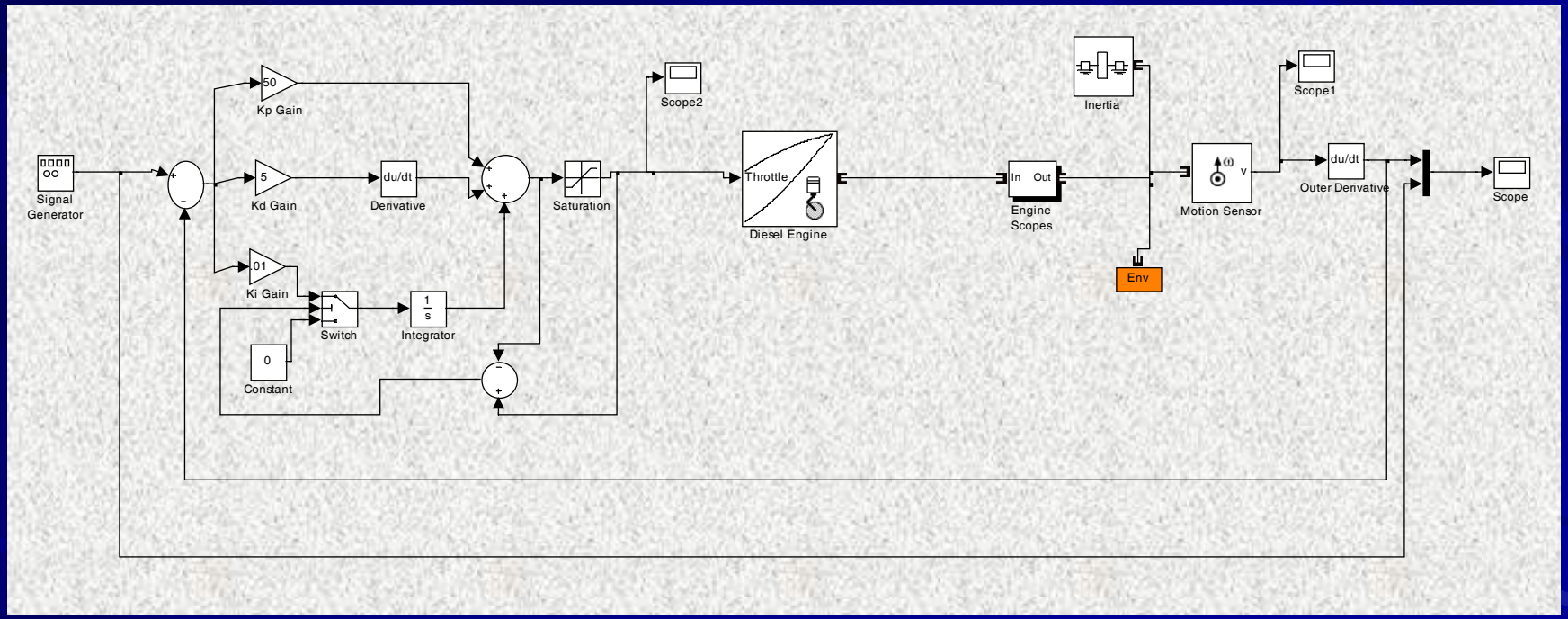
- Architecture Overview
- Demo Product
- Preliminary Results & Issues
- Risks & Risk Management
- Conclusion

Control Architecture

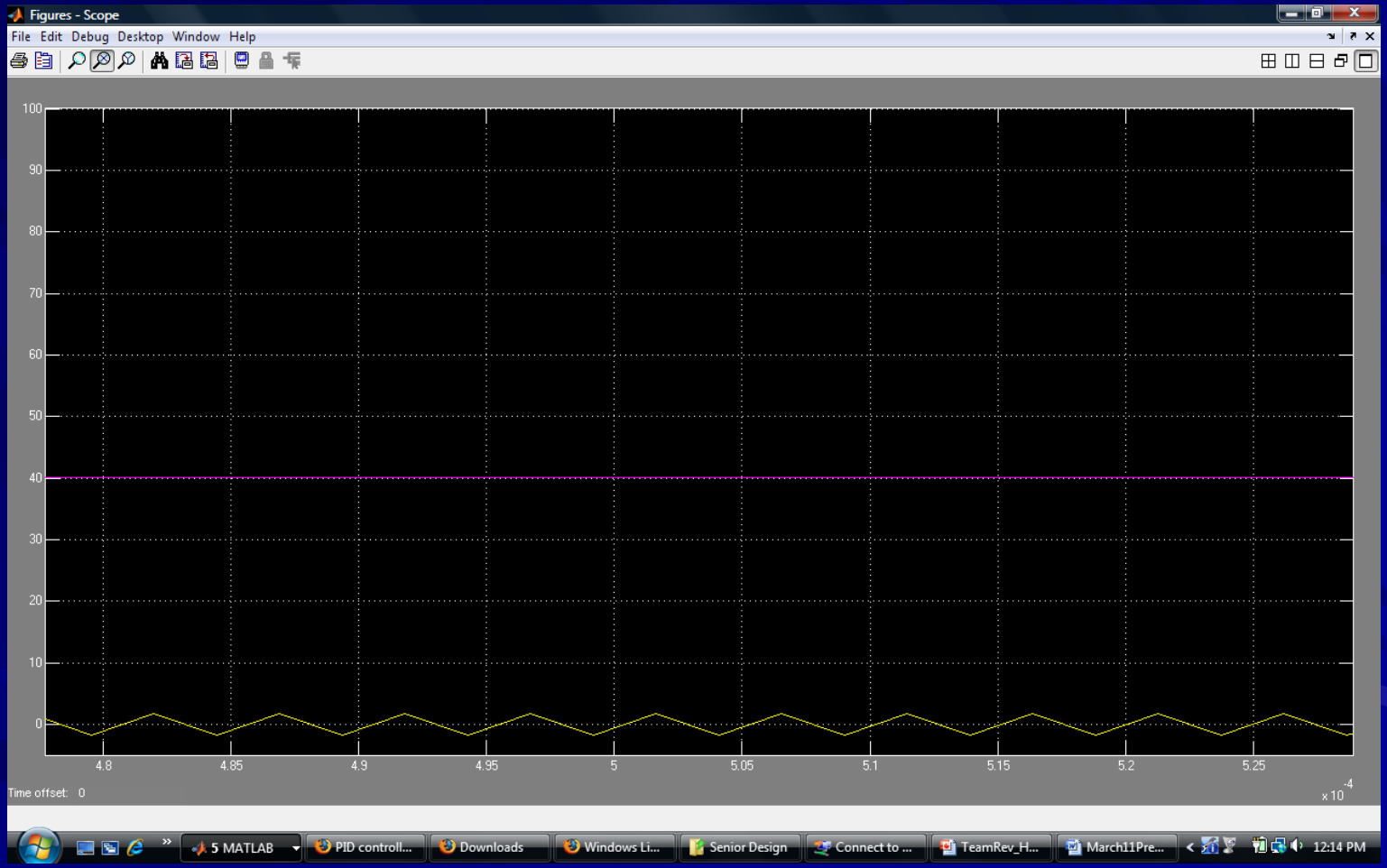
- Controller connected to subsystems via “HU”CAN
- Controller would connect to stock GMLAN
- All other stock systems remain unchanged
- Controller function as receiver and transmitter of CAN messages



1.3L Diesel Engine Controller



Preliminary Results & Issues



Preliminary Results & Issues

- Tuning controller is not as easy as it looks
- Trouble implementing Control Logic in Stateflow
- Yet to receive vehicle models that controller will connect to, i.e. BCU, BCM, ECU

Planning for the Unexpected!

Possible Incidents	Recovery Plan
Failure to receive component parts in a timely manner.	Rigorous modeling of component parts using PSAT as the plant
Failure of dSPACE's MicroAutbox to operate or perform as expected. This includes physical device failure from design or misuse, and non-compatibility with our component parts' control units.	Use of Mototron's Motohawk as supervisory control unit.
Lab implementation accidents	Quick reference docs for in lab safety protocols, safety equipment such as fire extinguishers, and lists of emergency contact phone numbers.

Conclusion

- Control system would have high-speed connection to ICE Controller, 2-Mode Transmission Controller and Battery Control Module via “HUCAN”
- Completed and currently testing a controller for a model 1.3L Diesel Engine.
- Currently working on Battery Controller and GM 2-mode controller, and Stateflow Logic.

Questions?