SEOK LEE

Business Analytics | Global Challenges in Business | Model Based Design (MBD) | Large Scale Modeling|On Board Diagnostic (OBD) | Model in the Loop (MIL)-Hardware in the Loop (HIL) Modeling & Testing | Chassis(Brake) Controls | Diesel Emission Controls | Controller Area Network (CAN) Definition | Dynamic Plant Modeling and Simulation (Vehicle, Tire) | Non-Linear System Modeling (Tire/Brake Hydraulics) | Engine Cell Testing (Emission) | ISO 26262 Compliant s/w Development | Co-Simulation | Validation & Verification | Driving Simulator | Model Refactoring

EDUCATION

03/2020–07/2021 — **University of Illinois- Urbana-Champaign**
MBA-Business analytics | Global challenge — Urbana, IL

01/2005–04/2010 — **University of Michigan at Dearborn**
M.S. in Mechanical Engineering — Dearborn, MI

1998–2005 — **Korea Aerospace University**
Bsc. in Mechanical Engineering — Korea

INDUSTRY EXPERIENCE

04/2019–Present — **Ford Motor Company**
Research Engineer- Driving Assist Technology — Dearborn, MI, USA

Mathematical Modeling for the Virtual Sensor Using Ray Tracing | Virtual Sensor Visualization in Unreal | Detailed Simulation Scene Generation in CarSIM |Co-Sim Framework for Vehicle Dynamics | 3d Scene Generation | Object Detection Using Virtual Camera

11/2015–04/2019 — **Ford Motor Company**
Autonomous Chassis Controls Engineer — Dearborn, MI, USA

MBD s/w Architecture Definition | Software (s/w) Testing on Autonomous Chassis Application | Development of Large Scale Modeling | Driving Simulation | MIL Modeling

04/2014–11/2015 — **Cummins Engine Company**
Diagnostic Team Leader — Columbus, IN, USA

- A team lead role to develop calibration contents for diesel emission controls diagnostics for Heavy Duty application. The work involved in emission test cell testing, vehicle testing, simulation unit testing, and data analysis.

Research Engineer Specialized in s/w Testing | Plant Modeling | Data Analysis | 3d Virtual Simulation | Controller Design | Model Based Design | Business Data Analytics

CONTACT INFO

seokl2@illinois.edu
https://github.com/seokleeus
+1 734-890-6340

TOOLS

MATLAB | Simulink | CarSIM | AMESim | Targetlink | CANALyzer | CANoe | Python | C++ | Tensorflow | OpenCV | Keras | R

LICENSE

Professional Engineer(Mechanical Eng- Thermal & Fluid, MI license # 6201066645)

Last updated on 2021-04-22.

07/2011–
04/2014

Cummins Engine Company
Technical Specialist — Darlington, UK

- Led aftertreatment diagnostic calibration development for Euro VI 4.5L/6.7L Cummins midrange engine
- Led/managed s/w HIL testing & maintenance team for engine/aftertreatment system

10/2007–
07/2011

Cummins Engine Company
Senior Control Engineer — Eindhoven, the Netherlands

- A liaison to support s/w development for a Dutch truck OEM (DAF trucks, NV). The main jobs to validate emission controls s/w, support diagnostics interface development, and fine tuning through various testing (engine cell, vehicle, HiL)
- Led/support aftertreatment J1939 CAN definition/diagnostic fault handling architecture requirement

ACADEMIC RESEARCH EXPERIENCE

2005–
2010

Graduate Research Assistant
University of Michigan — Dearborn, MI

- Brake Modeling and Design of Low Mass Vehicle (LMV)
  - Designed conventional brake system for LMV and developed brake diagram GUI
  - Modeled hydraulic brake system using AMESim
- LMV Dynamic Vehicle Model Development
  - Developed 8 Degree of Freedom (DoF) vehicle model using MATLAB/SIMULINK
  - Validated the vehicle model using CarSim
- Tire Simulation Model and Estimation Module Development
  - Developed/Compared Pacejka5.2, Milliken, and Dugoff Tire Model using MATLAB/SIMULINK
  - Developed Extended Kalman Filter (EKF) algorithm for tire force estimation
- Development of Anti Lock Brake System (ABS) Control Algorithm
  - Developed wheel slip control algorithm using Sliding Mode Control (SMC)
  - Designed alternative sliding surface in SMC
- Hydraulic Circuit Modeling of ABS
  - Developed ABS hydraulic circuit using AMESim
  - Developed Pulse Width Modulation (PWM)-SMC control algorithm for ABS application

PUBLICATIONS

2008

Investigation of Sliding-Surface Design on the Performance of Sliding Mode Controller in Antilock Braking Systems
IEEE Vehicular Technology, Volume 57 issue 2
Taehyun Shim, Sehyun Chang, **Seok Lee**

2007

Technical report- Brake design and modeling of Low Mass Vehicle
IAVS (Institute of Advance Vehicle System), University of Michigan-Dearborn
Seok Lee

2006

Development of a Brake System for Lightweight Vehicle
IMECE2006-15437, pp. 229-238; 10 pages
Seok Lee , Taehyun Shim , Byung-Kwan Cho