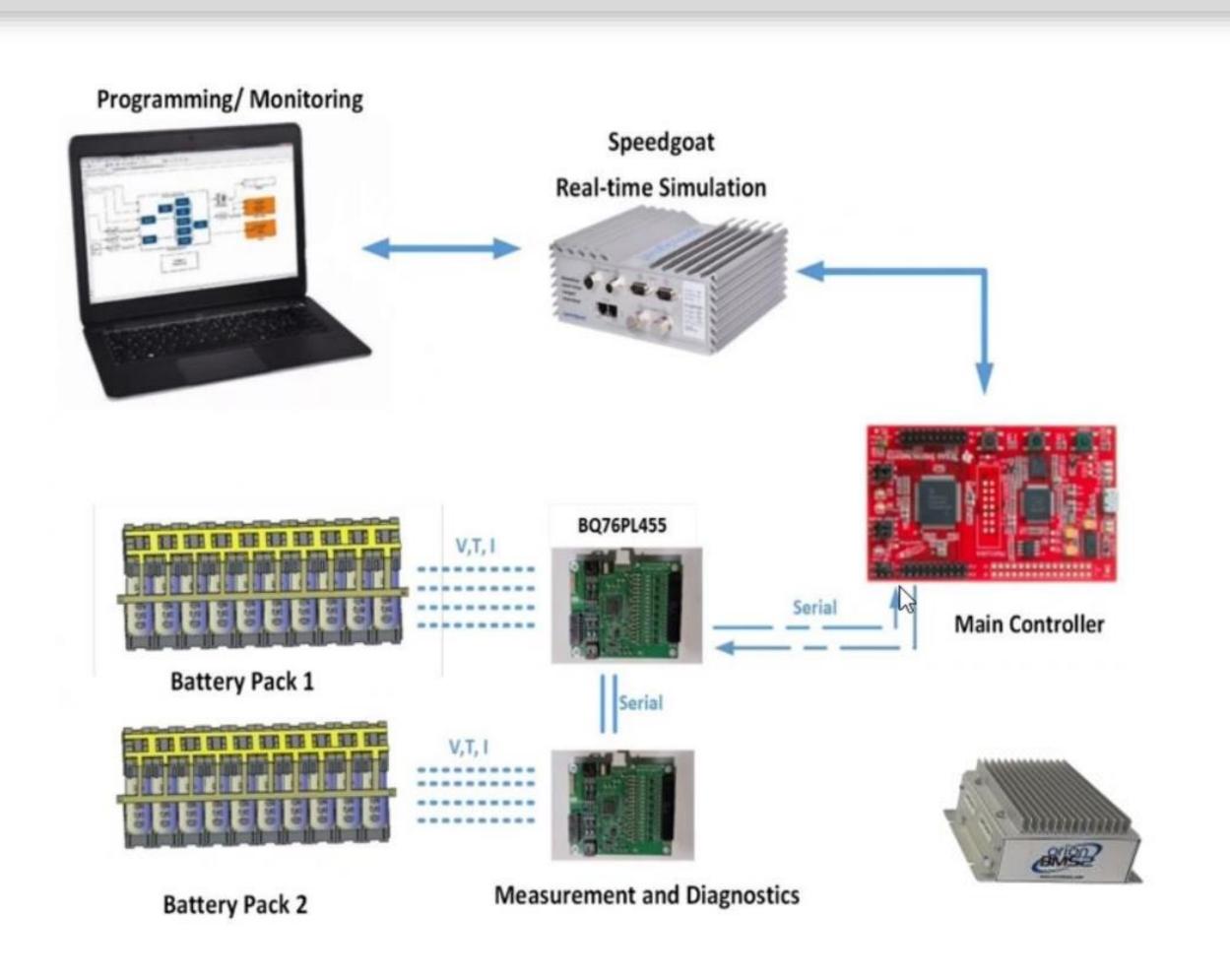
Battery Management System

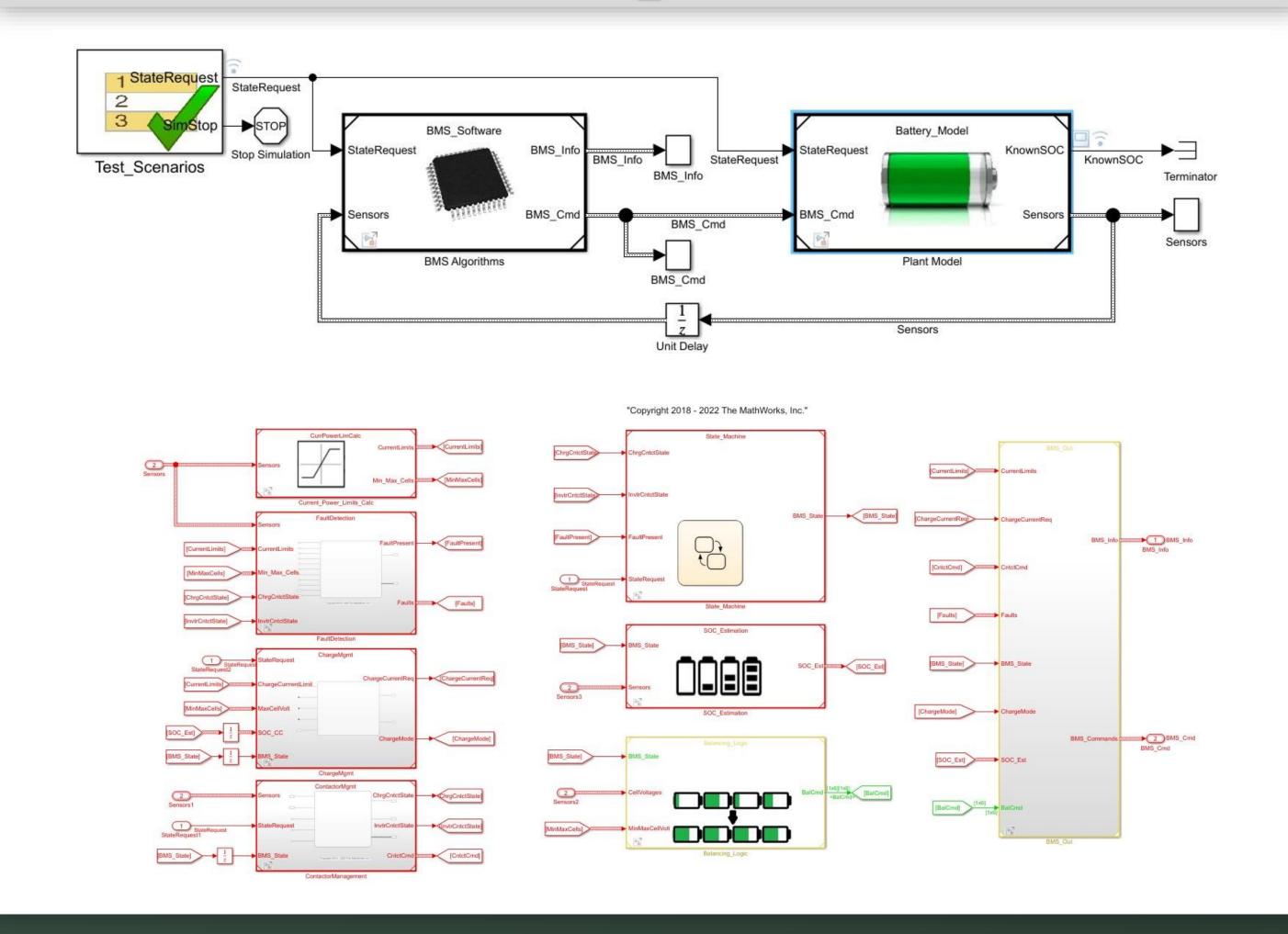
Centre for Mechatronics and Hybrid Technology Mechanical Engineering McMaster University Peyman Setoodeh

EECOMOBILITY (ORF) & HEVPD&D CREATE

System Design



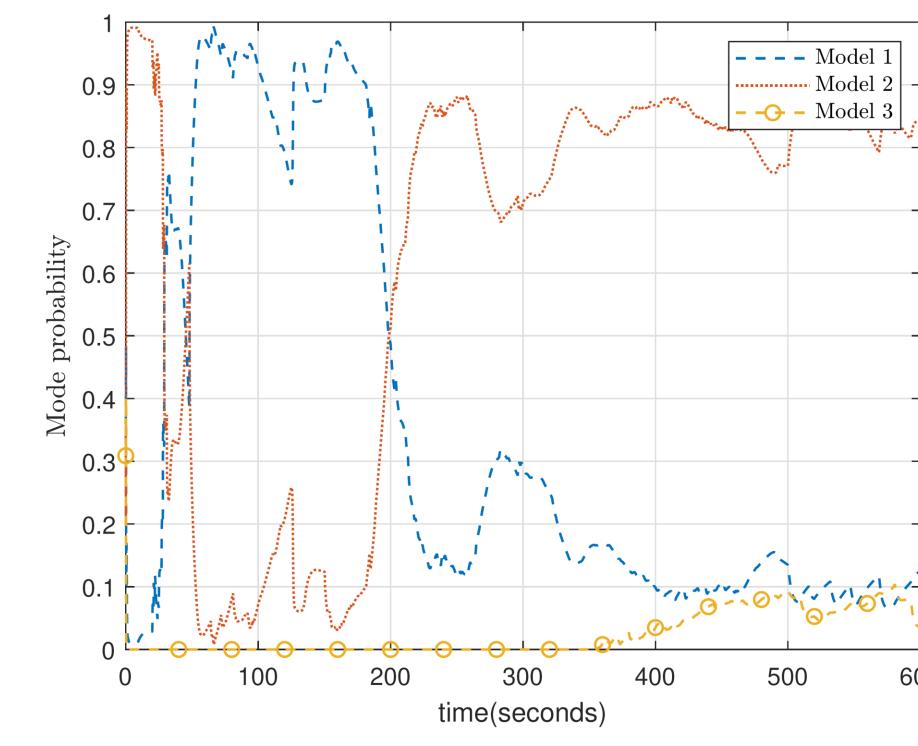
Software Implementation



State Estimation

- •BMS software implementation
 - Multiple battery packs
 - Different cell chemistries
- Accurate estimation
 - •SoC, SoH, and SoP
 - •SoC estimation error < 1%
- Robustness
 - Physical changes (aging)
 - Disturbance and noise
- Real-time application
 - •MATLAB/Simulink
 - Speedgoat

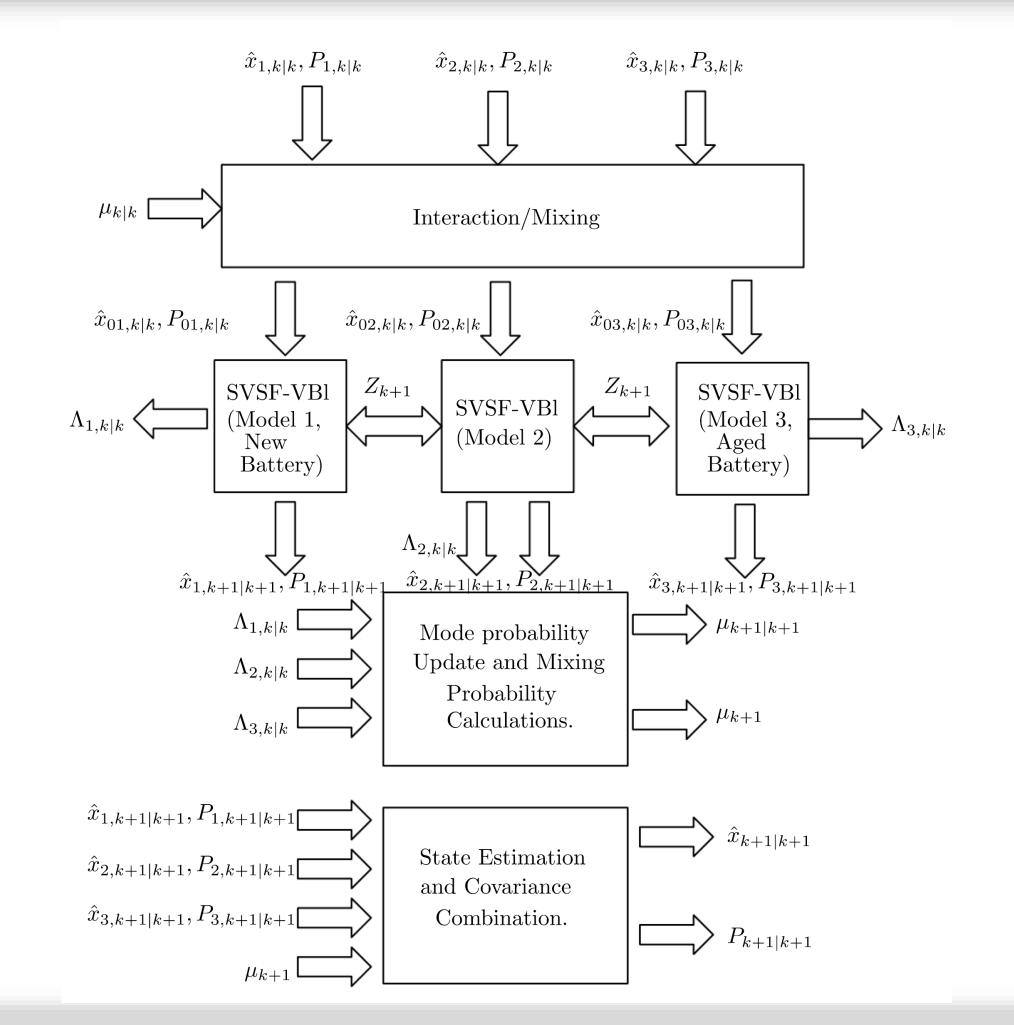
Mode Probability



S. Rahimifard, R. Ahmed, and S. Habibi, "Interacting Multiple Model Strategy for Electric Vehicle Batteries State of Charge/Health/Power Estimation," IEEE Access, vol. 9, pp. 109875-109888, 2021.

S. Rahimifard, S. Habibi, G. Goward, and J. Tjong, "Adaptive Smooth Variable Structure Filter Strategy for State Estimation of Electric Vehicle Batteries," Energies, vol. 14, no. 24: 8560, 2021.

IMM-SVSF Algorithm



Estimation Accuracy

