

## EDUCATION

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- **Doctor of Philosophy, Electrical and Computer Engineering** Sept 2023 – Present  
*University of Windsor, ON*
- **Master of Applied Science, Electrical and Computer Engineering** May 2019 – Dec. 2021  
*University of Windsor, ON*
- **Bachelor of Engineering, Electronics and Communication Engineering** Aug. 2014 – Apr. 2018  
*Anna University, India*

## EXPERIENCE

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- **Doctoral Teaching and Research Assistant** Sept 2023 – Present  
*University of Windsor, ON*
- **Research Assistant, Battery Management Systems Lab** Aug 2022 – Aug 2023  
*University of Windsor, ON*
- **Master's Teaching and Research Assistant** May 2019 – Dec 2021  
*University of Windsor, ON*

## CERTIFICATION

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- **Lithium Battery Safety, Lion Technology Inc.** Oct. 2023

## PUBLICATIONS

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### • Journals:

- Sunil, S., Pillai, P., Pattipati, K.R., and Balasingam, B. (accepted). Two-Stage Least Squares for Equivalent-Circuit Parameter Estimation of Lithium-Ion Batteries Using Pulse-Relaxation Excitation. *IEEE Transactions on Instrumentation and Measurement*.
- Pillai, P., Desai, S., Sunil, S., Pattipati, K.R., and Balasingam, B. (2025). Least Squares Approach to Improve Standardized Estimation of OCV and Internal Resistance in Batteries. *IEEE Journal of Emerging and Selected Topics in Industrial Electronics*.
- Sunil, S., Pattipati, K.R., and Balasingam, B. (2025). Piecewise Linear Approximation of Battery Open-Circuit Voltage Characteristics Using Dynamic Programming. *IEEE Transactions on Instrumentation and Measurement*.
- Sunil, S., Mozaffari, S., Singh, R., Shahrrava, B., and Alirezaee, S. (2023). Feature-Based Occupancy Map-Merging for Collaborative SLAM. *Sensors*, 23(6), 3114.

### • Conferences:

- Nguyen, N., Sunil, S., Pillai, P., and Balasingam, B. (2025, June). An Offsetting-Based Correction to Improve the Accuracy of Low-Rate OCV Curves for Lithium-Ion Batteries. In *2025 IEEE 34th International Symposium on Industrial Electronics (ISIE)* (pp. 1–6). IEEE.
- Mahmoodzadeh, M., Sunil, S., Pillai, P., Biondi, F., Strayer, D.L., Cooper, J.M., McDonnell, A.S., and Balasingam, B. (2025, June). Temporal Analysis of Cognitive Workload During Manual and Partial Driving Automation Based on the Detection Response Task. In *2025 IEEE 34th International Symposium on Industrial Electronics (ISIE)* (pp. 1–5). IEEE.
- Sundaresan, S., Sunil, S., Balasingam, B., and Pattipati, K.R. (2023, June). Joint Estimation of Open-Circuit Voltage and Equivalent Circuit Model Parameters Using State-Space Model Optimization. In *2023 IEEE Transportation Electrification Conference & Expo (ITEC)* (pp. 1–6). IEEE.
- Sunil, S., Sundaresan, S., Pillai, P., and Balasingam, B. (2023, June). Inverse Characterization of Open-Circuit Voltage for State-of-Charge Estimation of Batteries. In *2023 IEEE Transportation Electrification Conference & Expo (ITEC)* (pp. 1–6). IEEE.
- Sunil, S., Balasingam, B., and Pattipati, K.R. (2022, December). State-of-Charge Estimation of Batteries Using the Extended Kalman Filter: Insights into Performance Analysis and Filter Tuning. In *2022 IEEE 1st Industrial Electronics Society Annual On-Line Conference (ONCON)* (pp. 1–6). IEEE.

- Sunil, S., Mozaffari, S., Singh, R., Shahrrava, B., and Alirezaee, S. (2022, December). LiDAR-Based Cooperative SLAM with Different Parameters. In *2022 7th International Conference on Mechanical Engineering and Robotics Research (ICMERR)* (pp. 82–87). IEEE.
- Sundaresan, S., Sunil, S., Balasingam, B., and Pattipati, K.R. (2022, December). Fast Offline Battery Capacity Estimation Approach with Performance Bounds. In *2022 IEEE Electrical Power and Energy Conference (EPEC)* (pp. 188–193). IEEE.
- Sunil, S., Sundaresan, S., Balasingam, B., and Pattipati, K.R. (2022, December). Novel Table-Based Kalman Filter for State-of-Charge Estimation of Batteries. In *2022 IEEE Electrical Power and Energy Conference (EPEC)* (pp. 200–205). IEEE.

- **Thesis:**

- **S. Sunil.** “Heterogeneous Collaborative Mapping for Autonomous Mobile Systems”, *University of Windsor*, Canada, Jan. 2022.

## RECOGNITION AND SCHOLARSHIPS

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- Entrance scholarship (CDN \$7500), University of Windsor, Canada

May 2019