

VIKAS NARANG

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Professional Experience

- **Research Associate**, Dynamics, Systems and Controls Lab – Arizona State University *Dec 2024–Present*
 - Leading research on trajectory tracking and control for autonomous vehicles using GPS and onboard sensors within a drive-by-wire (DbW) framework.
 - Integrated DbW system with vehicle and dSPACE real-time platform to support closed-loop control development.
 - Developing and validating control strategies for lateral and longitudinal vehicle dynamics.
 - Developing control-oriented model and analyzing end-to-end latency in 4G/5G-enabled Vehicle-to-Network (V2N) systems to evaluate real-time control performance.
 - Exploring methods for future implementation of latency-compensated control in connected and autonomous vehicle systems over 4G/5G networked environments.
- **Sr. Technical Specialist**, Simulation, Controls and Analytics – Cummins Inc *2021–2024*
 - Led development of ML-based solutions for hybrid and conventional powertrain systems, including diagnostic algorithms, resulting in \$14M (estimate) in combined operational and fuel savings.
 - Coordinated PoC projects across analytics and controls teams to reduce downtime by 15%.
 - Performed techno-economic analyses of ICE/HEV platforms using fleet telematics data.
 - Served as SME on data-driven modeling, data strategy, and system behavior alignment.
- **Technical Specialist**, Advanced Dynamic Systems & Controls – Cummins Inc *2016–2020*
 - Led control development for on-highway powertrain, achieving drivability targets via simulation and testing.
 - Translated business requirements into control strategies using SIL validation and iterative improvements.
 - Collaborated with TPM & cross-functional teams to deliver test cell and vehicle-level control validation.
 - Applied VOC and FMEA to guide control algorithm development and ensure system-level quality and robustness.
- **System Performance & Integration Engineer**, Advanced Systems Integration – Cummins Inc *2012–2016*
 - Defined and managed vehicle and system-level requirements by working closely with cross-functional teams.
 - Designed system performance simulations and led emissions certification programs for on-highway powertrains.
 - Led field validation of Cummins diesel and natural gas engines in vehicle integration and test programs.
 - Led academic collaboration focused on high-efficiency engine development for advanced powertrain systems..

Education

PhD Systems Engineering, Arizona State University *2027, AZ, USA*
M.S. Mechanical Engineering, Michigan Technological University *2012, MI, USA*
B.S. Mechanical Engineering, M.D. University *2006, India*

Patents & Publications

- [US Patent 11,002,202](#) – Deep RL for air handling control.
- [US Patent 10,746,123](#) – Deep RL for fuel system referencing.
- [US20240326838A1/EP4408718A1](#) / [WO2023056007A1](#) – Optimized diagnostics using vehicle data.
- [SAE \(2019\)](#) – LPG Direct Injection for Medium Duty Trucks.
- [ASME \(2024\)](#) – Deep Q-learning for Plug-in Hybrid Energy Management.

Technical Skills, Certifications & Organizations

Tools: MATLAB, Simulink, Python, CarSim, GT Power, Azure Databricks, Git.

Certifications: ADAS, Intro to Self-Driving Cars

SAE: WCX Co-Chair; Reviewer – Vehicle Dynamics, Safety, Emissions.

ASME: Reviewer – Dynamic Systems, Autonomous Vehicles, Energy Systems.

IEEE: Reviewer – Dynamic Systems and Controls.