Dr. Shravan Vudumu, Ph.D.
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Summary

Dedicated individual having a doctorate degree in Mechanical Engineering and master's degree in Management. Over thirteen years of work experience in a multinational Fortune 500 corporation in development of combustion engines, controls, engineering data analysis, simulations and resolving technical challenges. Broad experience in global technical coaching and management.

Education

Georgia Institute of Technology, USA — Aug 2023 - Present
Master of Science in Analytics

University of Illinois, Urbana - Champaign, USA — Aug 2022 - July 2023
Master of Science in Management — **GPA: 4.0/4.0**
Specialization: Business Data Management and Communication

Missouri University of Science and Technology, USA — Aug 2006 - July 2010
Ph.D. Mechanical Engineering — **GPA: 4.0/4.0**
Dissertation title: "Experimental and Computational Investigations of Hydrogen Safety, Dispersion and Combustion for Transportation Applications"

Indian Institute of Technology - Madras, India — Aug 2001 - May 2006
M.Tech Energy Technology and B.Tech Mechanical Engineering — **GPA: 8.0/10.0**
Thesis title: "Modeling of a Diesel Engine for Speed Control". Minor: Industrial Engineering

Work Experience

Cummins Inc., Columbus, Indiana, USA

Software and Electronics Engineering - Technical Manager	Jan 2023 - Present
Dynamic Systems and Controls (DS&C) - Technical Manager	Oct 2021 - Dec 2022
Dynamic Systems and Controls (DS&C) - Technical Advisor	Oct 2019 - Sep 2021
Dynamic Systems and Controls (DS&C) - Group Lead	June 2017 - Sep 2019
Dynamic Systems and Controls (DS&C) - Technical Specialist	April 2015 - May 2017
Dynamic Systems and Controls (DS&C) - Senior Engineer	Aug 2010 - April 2015

Management and Technical Coaching Experience:

- Managed a team of twenty-four engineers and group leads to successfully deliver Cummins' DS&C-Controls Performance and Features deliverables for multiple diesel and spark ignition engine programs for on-highway and off-highway applications having wide range of engine displacement sizes and various air handling architecture complexities.
- Supervised multiple engine development programs by managing deadlines and prioritizing tasks. Handled technical challenges by identifying root cause and following the robust seven-step problem solving process. Guided the team by coordinating with stakeholders.
- Coached and developed local Brazil and China DS&C calibration and validation engineering resources that was needed to maintain Cummins' technology leadership in critical international markets. Built communication bridges with global engineering teams (China, India, UK, and Brazil). This included on-site support at East Asia Research and Development Center in China and at Cummins-Dongfeng joint venture research facilities.
- Aided in the development and restructuring of Cummins' technical documents and engineering practices to ensure wider global use and to integrate into the engine development process.
- Worked with human resources, recruiters, university professors and consultancy firms to address resources gaps by hiring new employees (technical contributors and group leads), interns and contractors as needed and avoided delays on key Cummins' DS&C deliverables.
- Co-ordinated Simulation Based Product Development and next generation engine architecture evaluation efforts in Cummins' East Asia Research and Development Center in China. Provided technical support to define scope, review model capability and to resolve technical issues.
- Led the development of Cummins' AUTOSAR air handling controller by understanding stakeholder voices, developing requirements, being liaison for cross functional engineering tasks, analyzing results and by participating in the delivery of the embedded software and its testing.
- Knowledge and experience on Effective Leadership, Project and Process Management, Managerial Accounting.

Technical Contributions and Experience:

- Designed improvements and completed calibration of model-based air handling controller for multiple Cummins engines to achieve higher fuel economy, optimal transient performance, and reduced emissions in various driving conditions. Supported cross functional development work.
- In-depth experience in collecting required data from test cells and prototype trucks, analyzing data for performance and on-board diagnostics analysis, and presenting results to stake holders.
- Developed MATLAB tools to analyze data from trucks, test cells and engine emission cycles to present key findings to the customers and stakeholders.
- Thorough experience in development and calibration of model-based air handling controller, virtual sensors, and diagnostics algorithms for different engine architectures.
- Extensive experience in engine simulations to develop new controller design concepts for various new air handling architectures using GT-POWER engine simulation software and Simulink tools.
- Comprehensive engineering analysis experience of intake air system, EGR system, heat exchangers, turbomachinery, combustion, and emissions of Cummins' engines.
- Experience in various Cummins' air handling software component designs, embedded software regression testing, building prototype ECM builds and open-loop/closed-loop bench testing.
- Developed a new model-based on-board diagnostic (OBD) algorithm for the air handling subsystem to detect failed parts on low-cost engine platforms (a six-sigma project).
- Developed a model-based turbocharger protection design to prevent engines from failure (a six-sigma project).
- Helped create DS&C technical requirements for multiple programs and worked with cross functional teams to develop MATLAB tools that can check performance against requirements.

Research Experience

- Characterized the fluid dynamics of new/alternative transportation fuels to ensure their safe and proper use. **Research was funded by US Department of Transportation** (through Research and Innovative Technology Administration's National University Transportation Center) and the **Department of Defense' Defense Logistics Agency** (through Air Force Research Laboratory).
- **Played a key role in setting-up Missouri's first hydrogen fueling station** together with operating a hydrogen powered commuter bus to develop, demonstrate, evaluate, and promote safe use of hydrogen-based technologies.
- Performed research on internal combustion engines powered by alternative and conventional fuels to characterize their unique performance, combustion, and emissions characteristics.
- **GM PACE** (General Motors - Partners for the Advancement of Collaborative Engineering Education) sponsored project for the integration of simulations into engineering curriculum.
- **Developed mathematical diesel engine models** for optimization of engine controllers.
- Developed a critical data acquisition system to acquire real time engine data for model validations .

Publications

As part of doctoral research, **published six international journal and conference papers**. Created technical documents for US DOT's repository and to guide Cummins' global engineers.

Computer Skills

MATLAB & Simulink, Python, R, Microsoft Office, GT-POWER, Cummins' Calterm, Minitab, ModeFrontier, FLUENT, ANSYS, AutoCAD, Mathcad, ABAQUS, ProE, Maple, LabVIEW, C, C++

Certifications, Honors & Activities

- Selected in "***Outstanding Under 35 Young Scientists Committee***" at "*HySyDays 2007, Second World Congress of Young Scientists on Hydrogen Energy*" organized by the Inter-University Research Center for Sustainable Development, Sapienza University of Rome, Italy.
- Recipient of the prestigious US Department of Transportation's (Research and Innovative Technology Administration) **National University Transportation Center (NUTC) assistantship**.
- Reviewed more than 30 peer-reviewed research papers for publications in international journals.
- Merit scholarship and tuition waiver (2001-06). Member of ASME, SAE, AIAA, IJHE (2009-10).
- Received **Six Sigma Green Belt** certification (July 2015).
- Completed **Systems Engineering Certification** program sponsored by Cummins and University of Detroit-Mercy.
- Completed certificate courses on **Statistics, Data Analytics, Machine Learning, R and Python**.
- Recipient of **Cummins' Business Impact Award for leadership and contributions** from VP.