

Samarth Vats

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Technical Skills

Languages: Python, SQL, JavaScript, MATLAB, Simulink, CSS, HTML

Frameworks: NodeJS, ExpressJS, Django, Flask, React, Pug/Jade, Bootstrap

Databases: PostgreSQL, MySQL, MongoDB, Google BigQuery

Data Analysis: Python (NumPy, Pandas, SciPy), Tableau, PowerBI, Looker Studio, Excel

Tools: Jira, Git/GitHub, Confluence, Asana, Notion

Certifications: Foundations in Design Thinking (IDEO.org)

Education

Clemson University

M.S. in Automotive Engineering

August 2015

Greenville, SC

University of Delhi

B.S. in Mechanical Engineering

July 2013

New Delhi, India

Work Experience

Aptiv PLC

February 2020 – present

Solutions Engineer | [Connected Vehicle & Fleet B2B SaaS](#)

Greater Detroit Area, MI

Managed end-to-end design, development, and implementation of machine learning (ML) models and actionable insights for an integrated hardware and software data platform for connected vehicles. Contributions include:

- Led development of an SVM-based classification model that identifies vehicles requiring imminent battery replacements, resulting in projected annual **savings of up to \$9600/vehicle or 12.3% in operating expenses (OE)**
- Led development of a tree-based regression model that reduces risk of exhaust system failure by detecting anomalous emission levels, resulting in projected annual **savings of up to \$6350/vehicle or 8.1% in OE**
- Developed 'distance-to-failure' and system health metrics unlocking **additional \$3200/vehicle (4.1%) in savings**
- Translated 'voice-of-the-customer' and market research into technical requirements and held subject matter discussions with business stakeholders to set model development timelines
- Collaborated with data science, data engineering, and UX teams to design visualizations for the client-facing web application, and drove integrations with third-party APIs within budget and latency constraints
- Developed Python and SQL tools to analyze and transform vehicle data into features and metadata for ML models

FEV North America Inc.

September 2015 – February 2020

Project Engineer | [Automotive Software Calibration](#)

Greater Detroit Area, MI

Led development, testing, validation, and release activities for engine control software calibrations for major automotive OEMs. Contributions include:

- Achieved **2021 and 2018 EPA certifications** for mass-market, light- and heavy-duty vehicles by calibrating engine misfire and NOx emissions control algorithms and related on-board diagnostics
- Developed and implemented a dual-sensor algorithm for engine misfire, resulting in a **12% gain in accuracy**
- **Reduced** average calibration **turnaround time from 10 to 2 hours** by developing MATLAB and Python-based tools
- Achieved over **95% reduction in diagnostic false failures** set in validation fleets (150+ vehicles)

Clemson University

October 2014 – August 2015

Graduate Research Assistant | [Advanced Powertrain Lab](#) (w/Dr. Zoran Filipi)

Greenville, SC

Led experimental and testing activities to develop a next-gen control model for gasoline PM emissions, including:

- Designed data acquisition setup, instrumentation, and prototype hardware for two research vehicles
- Rapid-prototyped engine control software using MATLAB/Simulink and performed regulatory drive cycles to **reduce model estimation errors by 35%**

University of Iowa

June 2012 – August 2012

Research Scholar | [Ratner Research Group](#) (w/Dr. Albert Ratner)

Iowa City, IA

- Simulated biomass gasification and NOx formation in a Stoker boiler using SNCR kinetics in ANSYS Fluent
- Co-authored ["Numerical Modeling of Urea Injection and NO Emission in a Stoker Boiler"](#), presented at the 8th U.S. National Combustion Meeting, May 2013