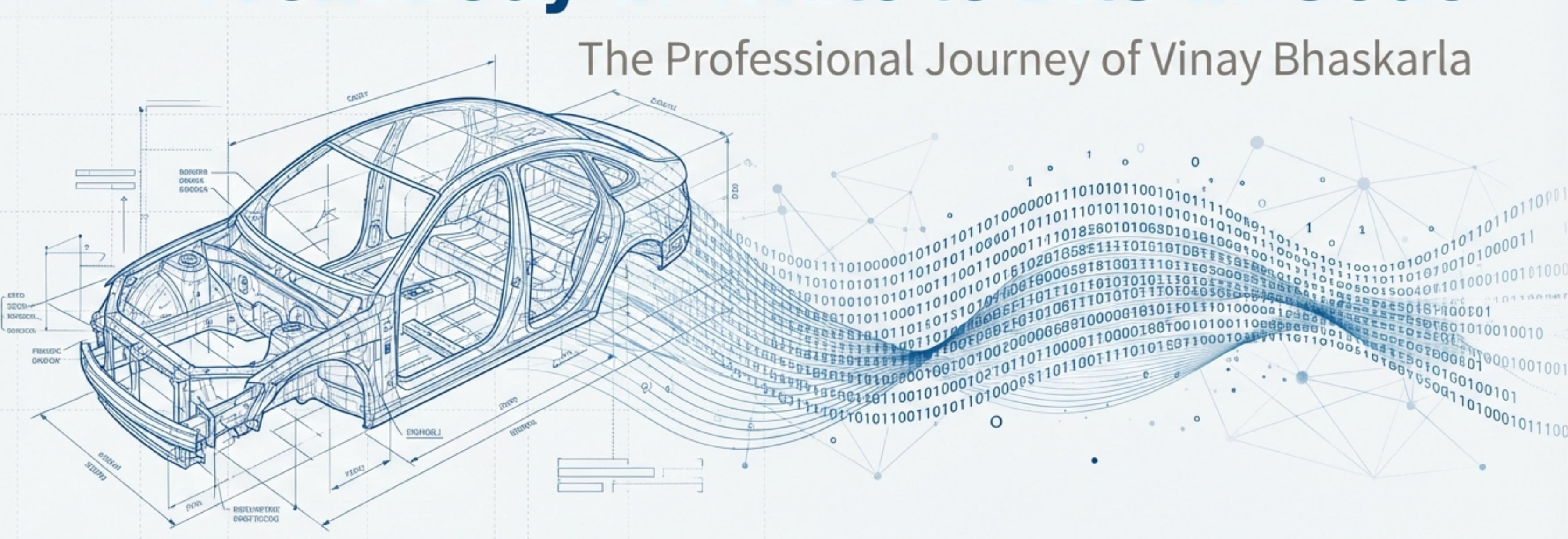


# **Engineering the Vehicle of Tomorrow: From Body-in-White to Bits-in-Code**

# The Professional Journey of Vinay Bhaskarla



# A Decade of Impact Across the Automotive Evolution

# 10

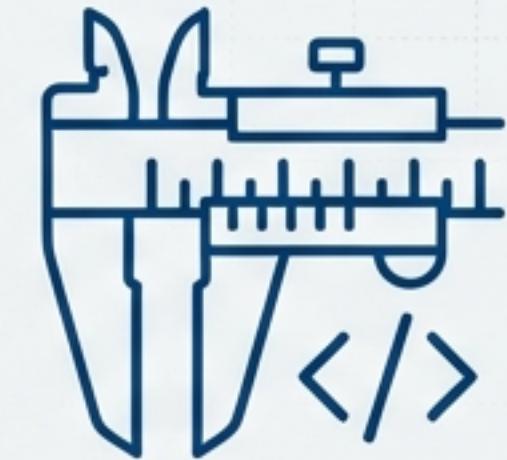
YEARS OF EXPERTISE

Proven track record in Body-in-White (BIW) design and development, executing new vehicle programs from initial concept to final production for global OEMs.



## Cross-Platform Leadership

Experience forged at industry leaders including Ford, FCA, Hyundai, and the EV pioneer Rivian, leading cross-functional teams to meet aggressive time, cost, weight, and quality targets.

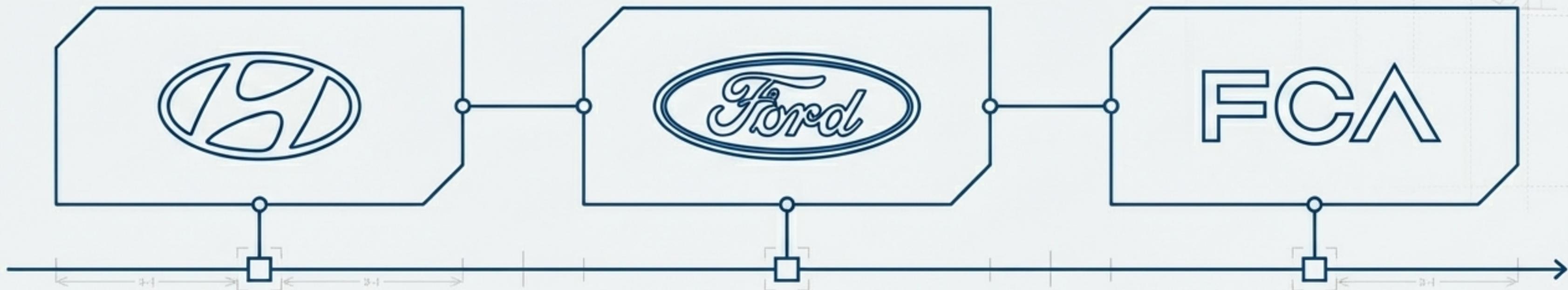


## Future-Focused Skillset

Bridging deep mechanical engineering proficiency (CATIA, Teamcenter, DFSS) with an expanding expertise in programming (Python) and computer science, currently pursuing an M.S. in CS from Georgia Tech.

# Forged in Global Automotive Leadership

My career began by building a deep, foundational expertise in BIW design, product development, and manufacturing support at the world's most established automotive companies.



## 2010-2013

Mastered core BIW design for high-volume vehicles (i10, i20), focusing on parametric modeling, benchmarking, and value engineering.

## 2015-2019

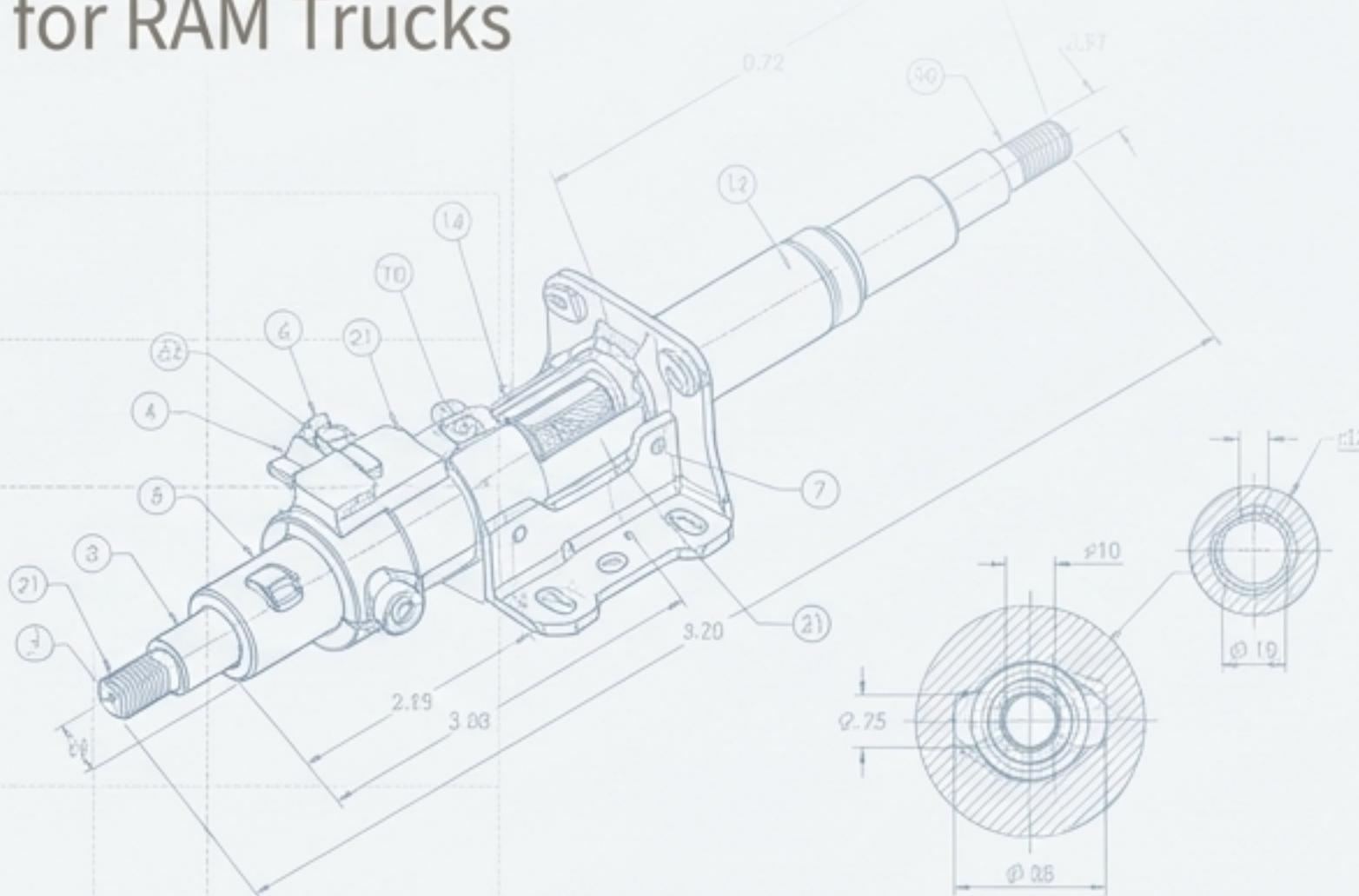
Elevated design skills to include complex packaging, digital innovation, and early-stage EV projects like the F150 Electric.

## 2019-2020

Transitioned to high-impact product engineering, taking ownership of complex systems like steering columns and cross-car beams, and directly tackling manufacturing and warranty issues.

# Case Study: Driving Down Warranty Returns at FCA

Steering Column Design Optimization for RAM Trucks



## Challenge

High warranty returns due to water intrusion in lower I-shaft bearing seals and significant part failure during assembly due to interference between the dash seal and dash panel.

## My Contribution

- Led a root cause analysis using the Kepner Tregoe method (Red X, Green Y approach).
- Applied DFSS (Reactive Green Belt) principles to optimize the upper I-shaft design.
- Redesigned the lower I-shaft bearing seals to prevent water intrusion.
- Created and executed a new Design Verification Plan and Report (DVPR) to validate the new designs for robustness.

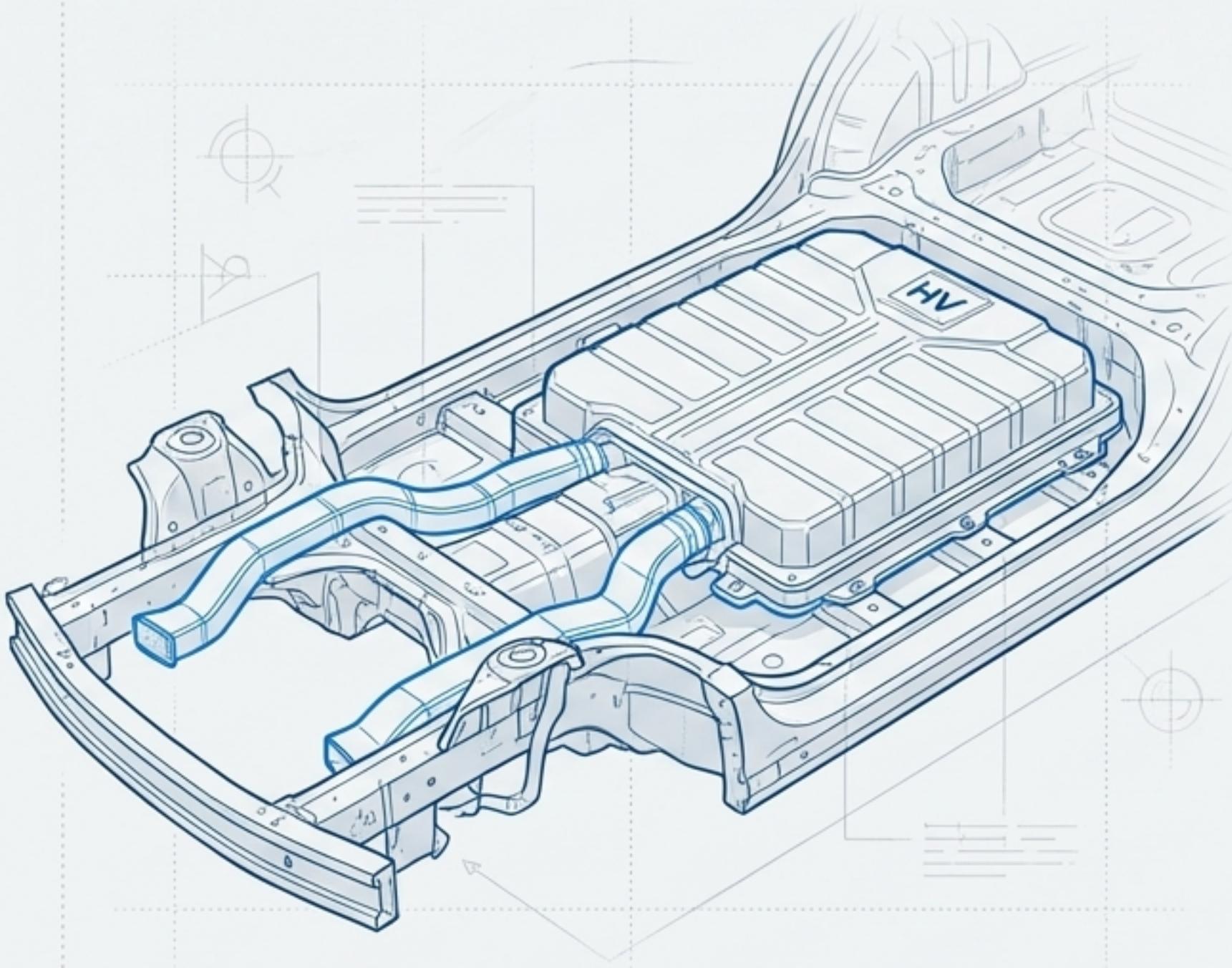
## Impact

- Successfully implemented design changes that reduced part failure during vehicle assembly.
- Delivered a robust solution that significantly reduced warranty returns for the components.

**TOOLS** NX11, Catia V5, Teamcenter, DFSS, DVPR

# Case Study: Engineering for Electrification at Ford

## Floor Panel & Bracket Design for Ford Electric/Hybrid Vehicles



### Challenge

Design new BIW components to package and support next-generation systems within existing vehicle platforms, including EV battery packs and new electronics.

### My Contribution

- **Ford Mondeo (EU):** Designed the front floor reinforcements assembly (CATIA V5) to accommodate new Gen-III air-cooled HV batteries, collaborating with the CAE group to optimize FEA results.
- **Ford F150 (Electric):** Designed the OBD mounting brackets, ensuring compliance with all Ford standards for production release.
- **Ford HEV:** Designed blow-molded HV battery cooling ducts.

### Impact

Delivered production-feasible designs on time, enabling the integration of critical EV hardware.



### Ford Recognition Award

Received for successfully designing the complex HV battery cooling ducts.

TOOLS Catia V5, Teamcenter, Vismockup

# Applying Foundational Expertise at the Forefront of EV Innovation



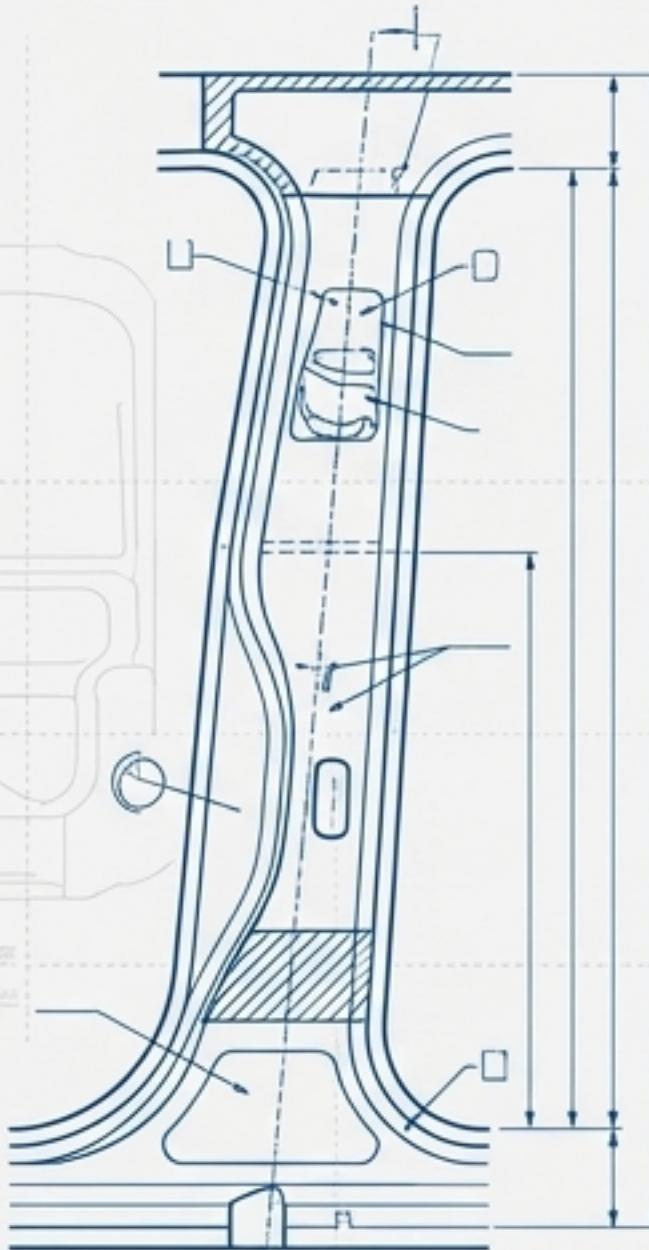
At Rivian, I leveraged my deep BIW and product development background to tackle the unique challenges of designing and launching a new generation of electric commercial vehicles from the ground up.

## Key Responsibilities as Senior Mechanical Design Engineer (2021-2024):

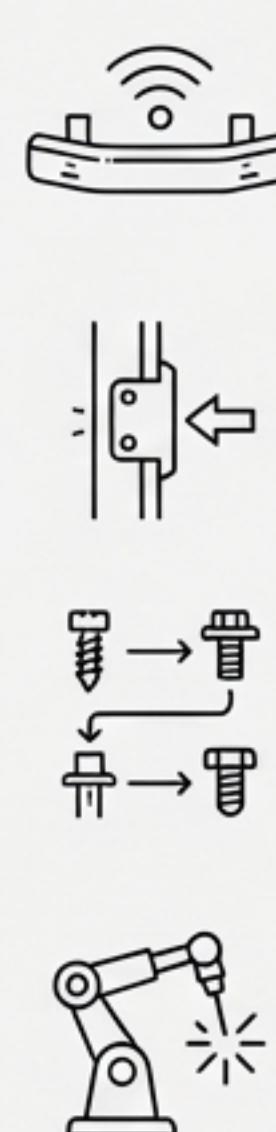
- BIW Structure Design (fasteners, sealers, B-pillar, roof, floors).
- CAD modeling, GD&T, and fastening strategy development in CATIA V6 (3Dx).
- Direct plant support at Normal, IL, to resolve critical production issues.
- PLM management in Enovia and issue tracking in JIRA.

# Case Study: End-to-End Design for the Rivian RPV/EDV

From Sensor Integration to Structural Integrity on Electric Delivery Vans



B-Pillar Cross-Section  
(Schematic)



## Bumper Beam (RPV700/500)

Designed the radar bracket and attachment features, enabling the integration of the Radar ASSY module and its wire harness.

## Crash Sensor Bracket (RPV700/500)

Designed a new crash sensor bracket for the B-pillar, a critical safety component.

## Fastening Strategy (RPV & RCV)

Created and released weld and SPR strategies for the entire BIW. Developed a commonization strategy for fasteners across vehicle platforms to drive cost savings.

## Plant Support

Resolved a critical weld spatter issue on the B-pillar that was affecting airbag deployment on RPV and R1T vehicles.

TOOLS USED: CATIA V6 (3Dx), ENOVIA, JIRA



# A Portfolio of Contributions to the Rivian Platform

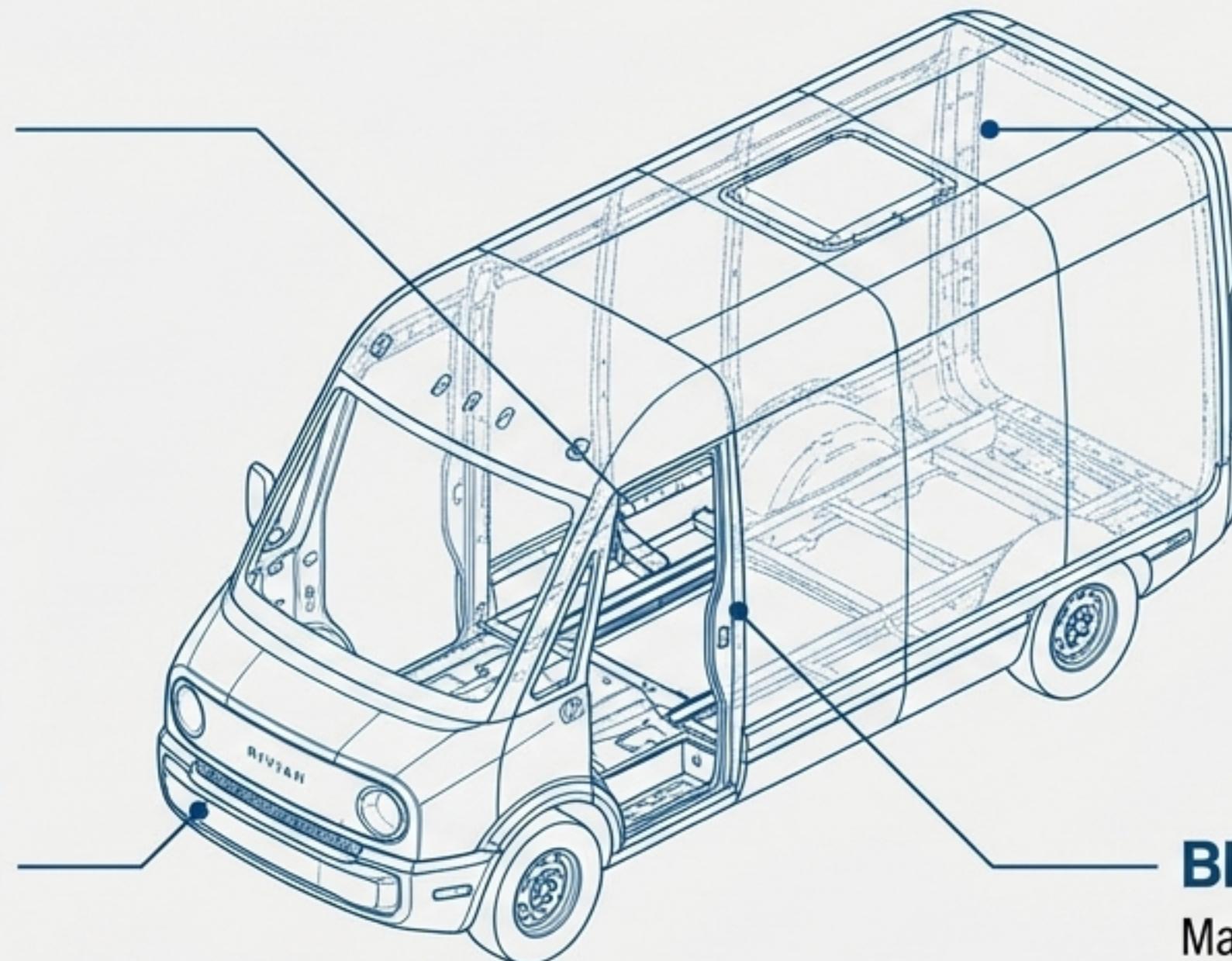


## Skateboard Midrails

Designed a new concept for midrails, transitioning from complex aluminum extrusions to robust steel tubes.

## Bumper & Radar Integration

Designed brackets and features on the bumper beam to mount critical ADAS hardware.



## Cargo Cooling Ventilation

Designed the complete cargo cooling ventilation system integrated into the roof panels for the EDV700.

## BIW Fasteners & Sealers

Managed weld strategies, SPRs, flow drill screws, and sealers across the BIW structure, releasing all changes via Change Actions (CAs).

# From CAD to Code: Building a New Toolkit for Engineering

## Core Engineering Expertise



CATIA V6/V5, 3Dx, NX11,  
Teamcenter, Enovia, GD&T,  
DFMEA, DFSS, DFM.

*A decade of mastering the tools and methodologies of world-class automotive design.*

## Emerging Computational Skillset



Python, Generative AI  
(Familiarity), Data Analysis,  
Pursuing M.S. in Computer Science.

*Actively developing the computational skills to solve the next generation of engineering challenges.*

# Application in Practice: Data-Driven Material Strategy at Nissan

## CONTEXT

Working on a flex sourcing strategy for materials to generate significant cost savings.

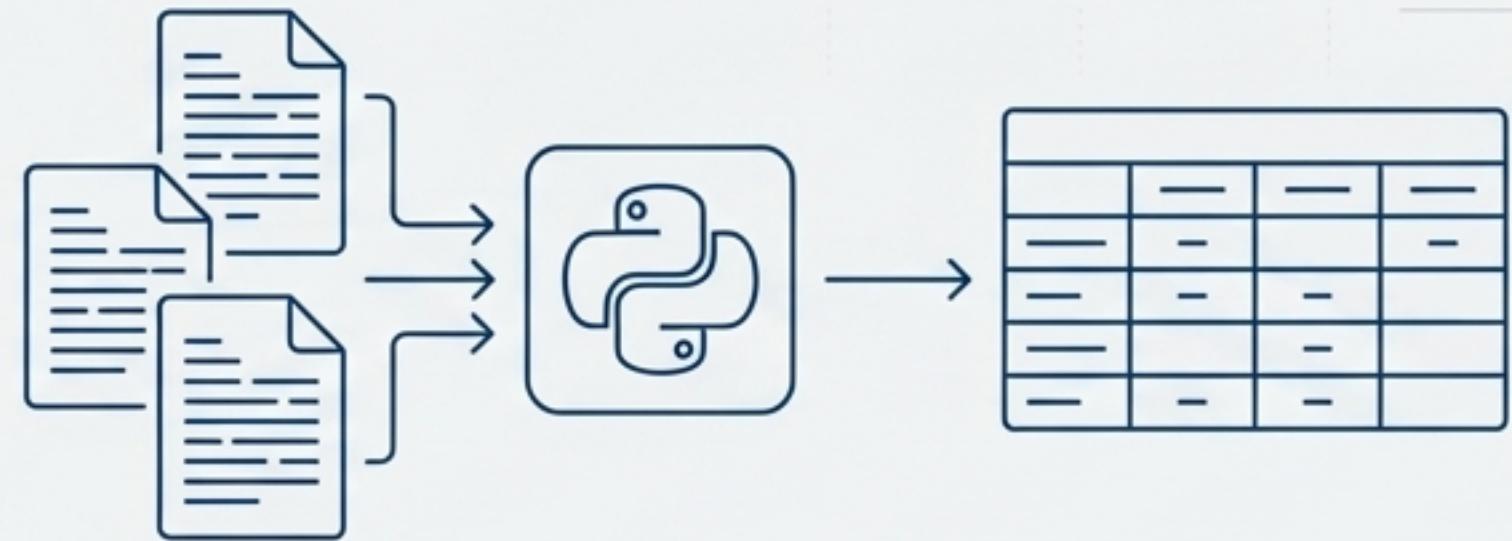
## Challenge

Efficiently and accurately compare the mechanical properties and chemistry of numerous flat steel grades from different potential suppliers to ensure engineering requirements are met while optimizing cost.

## Additional Impact

Currently working on steel coil width optimization algorithms to reduce scrap at the mill level, further driving cost savings.

## My Solution



Developed custom tools using **Python** to automate the comparison of material properties between different steel grades. This tool directly aids in the flex sourcing decision-making process, replacing manual and error-prone analysis.

## TOOLS

Python, NX11, Catia V5, DVPR

# A Formal Commitment to Future-Facing Skills



**Georgia**Institute  
of **Tech**nology

## Online Master of Science in Computer Science (OMSCS)

Georgia Institute of Technology, Atlanta, USA

2024 - Present

“

*My pursuit of an M.S. in Computer Science is a deliberate investment to deepen my expertise in software development, algorithms, and data structures. My goal is to apply this knowledge directly to the increasingly complex, software-defined challenges of the modern automotive industry.*

# Comprehensive Technical Skillset



## CAD & PLM Systems

### Software

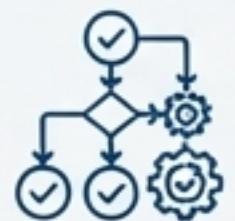
- CATIA V6 (3DX), CATIA V5, NX11

### PLM

- Teamcenter, Enovia, WERS

### Visualization

- Vismockup



## Engineering & Design Methodologies

### Core Skills

- BIW Design (Underbody & Upperbody), Sheet Metal Design, GD&T, DFM, Bill of Materials (BOM) Management

### Process & Quality

- DFMEA, DVPR, DFSS (Reactive Green Belt), Project Management, Engineering Change Management



## Computational & Analytical Tools

### Programming

- Python

### CAE

- Hypermesh, Abaqus (Experience from UMich Research)

### Emerging Tech

- Familiarity with Generative AI

# Let's Build the Future.

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*Seeking to apply a unique blend of deep automotive design expertise and computational problem-solving to drive innovation in a challenging and forward-thinking environment.*