Daniel R. Whitaker | Senior Mechanical Engineer | Product Design & Manufacturing

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Basics

- Senior mechanical engineer with 10+ years of experience in product design, analysis, and manufacturing for automotive and industrial systems
- Proven record of taking concepts from requirements through CAD, prototype validation, and production launch
- Strong background in GD&T, FEA, DFM, and root-cause analysis; comfortable leading cross-functional teams and suppliers
- Committed to designing reliable, cost-effective, and sustainable mechanical solutions for demanding operating environments

Education

University of Texas at Austin **https://www.utexas.edu**

Master, Mechanical Engineering, Score: 3.9 *Aug 2012–May 2014*

- Focused on design optimization, simulation, and advanced manufacturing methods
- Completed thesis on lightweight structural mounts for electric vehicle powertrains
- Served as graduate teaching assistant for the senior capstone design course

Courses: Advanced Thermodynamics, Finite Element Methods, Mechanical Vibrations, Design for Manufacturing, Robotics and Automation, Computational Fluid Dynamics

Texas A&M University **https://www.tamu.edu**

Bachelor, Mechanical Engineering, Score: 3.8 *Aug 2008–May 2012*

- Built a strong foundation in mechanics, materials, and product design
- Led a Formula SAE team project focused on chassis and suspension improvements
- Graduated with honors and completed an industry internship in automotive manufacturing

Courses: Statics and Dynamics, Materials Science, Machine Design, Manufacturing Processes, Heat Transfer, Instrumentation and Measurement

Work

Apex Mechanical Systems **https://www.apexmechsystems.com**

Senior Mechanical Engineer *Jan 2020–Present*

- Lead mechanical design for industrial actuation and enclosure platforms, owning requirements, architecture, detailed CAD, and production release
- Drive FEA, thermal, and tolerance stack-up analyses to validate performance, reliability, and safety margins before prototype builds
- Partner with electrical, software, manufacturing, and supply-chain teams to launch cost-effective designs into low- and high-volume production
- Mentor junior engineers and standardize design-review, DFMEA, and drawing-check processes across the mechanical team

Keywords: Product Development, GD&T, FEA, DFM, Supplier Qualification

NovaDrive Powertrain **https://www.novadrivepowertrain.com**

Mechanical Design Engineer *Jun 2016–Dec 2019*

- Designed aluminum and steel powertrain components for hybrid and electric drivetrains, from concept through validation and launch
- Created 3D CAD models, detailed drawings, and tolerance analyses using SolidWorks and Creo in a PLM-controlled environment
- Led root-cause investigations for durability and NVH issues, implementing design and process corrective actions with suppliers
- Supported prototype builds, dyno testing, and production trials, reducing component mass by 12% without compromising strength

Keywords: Powertrain, SolidWorks, Tolerance Analysis, NVH, Validation Testing

Cascade Robotics **https://www.cascaderobotics.com**

Manufacturing Engineer *Jul 2014–May 2016*

- Owned manufacturing processes for precision-machined and sheet-metal assemblies used in collaborative robot systems
- Developed work instructions, fixtures, and inspection plans; improved first-pass yield from 88% to 96% on a key assembly line
- Applied Lean and Six Sigma methods to reduce cycle time, scrap, and variability while maintaining tight dimensional tolerances
- Collaborated with design engineering on DFM reviews and ECO implementation for new product introductions

Keywords: Lean Manufacturing, Six Sigma, CNC Machining, Fixture Design, Process Improvement

Languages

English: Native or Bilingual Proficiency **Keywords**: Technical writing, Public speaking

Spanish: Limited Working Proficiency **Keywords**: Conversational Spanish, Supplier communication

German: Elementary Proficiency **Keywords**: Basic conversation

Skills

Mechanical Design: Expert **Keywords**: SolidWorks, Creo, AutoCAD, GD&T, DFM, Tolerance Analysis

Analysis & Simulation: Advanced **Keywords**: ANSYS, Abaqus, FEA, CFD, Thermal Analysis, MATLAB

Manufacturing & Quality: Advanced **Keywords**: Lean Manufacturing, Six Sigma, CNC Machining, Injection Molding, SPC, Root Cause Analysis

Project Leadership: Advanced **Keywords**: Cross-functional Teams, Agile, Vendor Management, Budgeting, Risk Mitigation

Software & Automation: Intermediate **Keywords**: Python, LabVIEW, PLC Programming, Minitab, Jira

Awards

Engineering Excellence Award

Apex Mechanical Systems *Nov 2023*

Recognized for leading the redesign of a high-volume actuation platform that reduced field failures by 35% and lowered manufacturing cost by 18%.

Innovation Patent Award

NovaDrive Powertrain *Mar 2019*

Awarded for a lightweight mounting concept that improved durability and simplified assembly for an electric-drive module.

Certificates

Professional Engineer (PE) License **https://engineers.texas.gov**

Texas Board of Professional Engineers *Jun 2019*

Certified SolidWorks Professional (CSWP) **https://www.solidworks.com/certification**

Dassault Systèmes *Feb 2015*

Six Sigma Green Belt **https://asq.org/certification**

ASQ *Sep 2017*

Publications

Journal of Mechanical Design **https://asmedigitalcollection.asme.org/mechanicaldesign**

Design Optimization of Lightweight Powertrain Mounts for Electric Vehicles *Apr 2021*

- Presents a topology-optimization workflow for aluminum-intensive mounts that balances stiffness, durability, and mass
- Validates simulation results with physical testing and discusses implications for NVH and assembly
- Provides practical guidance for engineers designing lightweight structural components in electrified powertrains

Projects

Lightweight EV Powertrain Mount **https://www.apexmechsystems.com/proje**

Aluminum-intensive mount designed to reduce mass while meeting durability and NVH targets. *Jan 2*

- Led concept generation, CAD, FEA, and prototype validation for a next-generation powertrain mount
- Reduced mass by 22% versus the incumbent design while improving stiffness and fatigue life
- Worked with casting and machining suppliers to transition the design into production

Keywords: Lightweighting, Topology Optimization, Fatigue, Casting

Automated Assembly Cell Retrofit **https://www.novadrivepowertrain.com/pr**

Retrofit of a manual powertrain assembly cell with semi-automated fixtures and error-proofing.

- Specified fixtures, sensors, and PLC logic to reduce operator error and improve cycle time
- Collaborated with controls and safety teams to commission the cell and validate capability
- Achieved a 20% throughput gain and a 30% reduction in rework during the first quarter after launch

Keywords: Automation, Fixture Design, PLC, Process Validation

Solar Thermal Collector Test Stand **https://www.utexas.edu**

Laboratory test stand for evaluating solar thermal collector efficiency under controlled conditions. *Sep 2013–May 2014*

- Designed and built instrumentation, plumbing, and data-acquisition hardware for a graduate research project
- Calibrated sensors and analyzed thermal performance across varying flow rates and irradiance levels
- Documented results in a thesis chapter and presented findings to the research group

Keywords: Thermal Systems, Instrumentation, Data Acquisition, Testing

Interests

Mountain Biking: Trail Riding, Bike Maintenance, Endurance Training

Woodworking: Furniture Design, Hand Tools, Joinery

Robotics: FIRST Mentoring, Arduino, ROS

Volunteer

FIRST Robotics Competition **https://www.firstinspires.org/robotics/frc**

Engineering Mentor *Sep 2017–Present*

- Mentor a high-school robotics team on mechanical design, fabrication, and competition strategy
- Guide students through CAD, prototyping, and design reviews, reinforcing safe and iterative engineering practices
- Help organize shop training and regional event preparation for a team of 30+ students

Engineers Without Borders USA **https://www.ewb-usa.org**

Project Volunteer *Jan 2015–Dec 2016*

- Supported a clean-water project by helping design and test a small-scale pumping and filtration system
- Assisted with technical documentation, supplier coordination, and community feedback sessions
- Participated in fundraising and outreach activities to sustain the chapter's project pipeline