Bailey Wu

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EXPERIENCE

Senior Tooling Design Engineer **June 2024 – Current**
The Boeing Company – Boeing Commercial Airplanes ***Seattle, WA***

- Developed detailed 3D models, assemblies, and manufacturing drawings in CATIA V5, applying tolerance stack-up analysis and DFM principles to ensure accurate translation between design intent and physical hardware outcomes.
- Performed simulation-driven mechanical design of production tooling and structural systems, executing Finite Element Analysis (FEA) in ANSYS across static, dynamic, and thermal loading conditions to support design validation.
- Applied stress and fatigue analysis to evaluate structural integrity and long-term durability of production tooling, ensuring designs met aerospace safety and performance requirements across the full operational envelope.
- Maintained engineering data integrity through PLM systems, enforcing version control, documentation accuracy, and full traceability across program phases in compliance with robust aerospace standards.

Senior Materials & Process Engineer **August 2022 – May 2024**
Raytheon Technologies - Raytheon Vision Systems ***Goleta, CA***

- Conducted advanced material testing and characterization including metallurgical analysis, thermal analysis, hardness testing, and microstructure evaluation to validate material behavior and joint integrity of space flight hardware.
- Designed and implemented custom test fixtures and experimental protocols to evaluate material performance under varied loading conditions and environmental exposures, generating actionable data to support process qualification.
- Applied Statistical Process Control (SPC) and Cpk analysis to key performance indicators, improving process capability and reducing variation through data-driven experimental methods analogous to DOE-based characterization workflows.
- Directed procurement and qualification of $1M+ in capital equipment, authoring technical specifications, overseeing installation and process validation, and delivering measurable improvements in throughput capability.

Semiconductor Process Engineer **March 2021 – August 2022**
Lockheed Martin – Missiles Fire Control ***Goleta, CA***

- Optimized automated assembly lines by integrating precision hardware and custom control logic, developing process interlocks and equipment interfaces to maximize repeatability and reduce operator-introduced variation.
- Conducted failure analysis investigations using cross-sectioning and scanning electron microscopy (SEM), applying systematic root cause analysis methodologies to improve long-term reliability of mission-critical assemblies.
- Presented Production Readiness Reviews (PRR), Critical Design Reviews (CDR), and Table Top Reviews (TTR) to multi-level defense contractor and government stakeholders.
- Developed structured V&V frameworks encompassing non-destructive evaluation, vibration analysis, and thermal cycling to validate process and hardware performance under field environmental conditions.

Manufacturing Engineer **July 2018 – March 2021**
Raytheon Technologies – Raytheon Vision Systems ***Goleta, CA***

- Managed programs using Earned Value Management (EVMS), developing and controlling engineering budgets while overseeing manufacturing and process development for CRAD products transitioning into full scale production.
- Directed hands-on assembly operations within a Class 7, Grade C, Level 3 cleanroom environment, ensuring full compliance with space manufacturing standards in contamination-sensitive laboratory environments.
- Designed prototype builds through additive manufacturing and fabrication, providing hands-on engineering support from shop-floor implementation through full product lifecycle close-out.

EDUCATION

UNIVERSITY OF WASHINGTON **June 2025**
Master of Science in Mechanical Engineering ***Seattle, WA***

UNIVERSITY OF CALIFORNIA, SANTA BARBARA **June 2018**
Bachelor of Science in Mechanical Engineering ***Santa Barbara, CA***

SKILLS

CATIA V5, SolidWorks, PTC Creo, ENOVIA, ANSYS, MATLAB, Python, Minitab, JMP, GD&T, PFMEA, CMM