

ALAN MOODY

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PROFESSIONAL PROFILE

Motorsport Engineering student with three years of Formula Student experience across US and UK teams. Strong hands-on background in suspension design, CAD/CAM, and manufacturing including machining and assembly. Currently designing the front upright for Oxford Brookes Racing's electric race car, with hub motor and planetary gearbox packaging determining geometry and stiffness trade-offs.

EDUCATION

BEng (Hons) Motorsport Engineering with Industrial Placement | Oxford Brookes University | Oxford, UK | Sept 2024 – June 2028

- IET & IMechE Accredited Programme

Mechanical Engineering | Oregon State University | Corvallis, Oregon, USA | Sept 2022 – June 2024

- Completed two years of ABET-accredited Mechanical Engineering degree (transferred to Oxford Brookes in 2024)
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TECHNICAL SKILLS

- **CAD & Design:** SolidWorks (2+ years), Siemens NX (2+ years), GD&T, Technical Drawing (BS8888), Design for Manufacturing (DFM)
 - **Analysis & Simulation:** MATLAB (data processing, Simulink), Ansys FEA, Python
 - **Testing & Metrology:** Strain gauges, Wheatstone bridges, data acquisition (DAQ), precision measurement (micrometers, calipers, dial indicators, bore gauges, gauge blocks)
 - **Manufacturing:** Manual mill and lathe, welding (GMAW/SMAW), 3D printing
 - **Data & Operations:** Microsoft Excel (Advanced: Macros, Power Automate, Power Query)
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MOTORSPORT & ENGINEERING EXPERIENCE

Oxford Brookes Racing (OBR) | Oxford, UK | Formula Student Engineer | Sept 2024 – Present

- **Front Upright Design:**
 - **Systems Integration & Packaging:** Designed front suspension uprights, successfully packaging complex subsystems including hub motors and planetary gearboxes.
 - **Design Optimization:** Modified component geometry based on Finite Element Analysis (FEA) results to achieve stiffness and packaging targets.
 - **GD&T & Tolerance Analysis:** Applied positional tolerances and calculated tolerance stack-ups to ensure the precise fitment of drivetrain components into the assembly.
- **Carbon fibre steering column and bushing housing design:**
 - **Hybrid Material Design:** Co-designed an assembly with a carbon-fibre steering column mount with an aluminium bushing housing for the 2025 competition vehicle.
 - **Technical Standards (BS8888):** Made technical drawings compliant with BS8888 standards to ensure manufacturing accuracy.
 - **Design for Manufacture (DFM):** Improved component design for CNC machining by making tooling placeholders in CAD, analysing tool access, and sequencing machining features.

- **Design for Assembly (DFA):** Conducted full-assembly interference analysis and clearance checks to confirm the steering system could be easily assembled and disassembled.
- **Cross-Functional Collaboration:** Collaborated with the composites sub-team to validate ply-layup feasibility and verify the component design met manufacturing constraints.

Global Formula Racing (GFR) | Corvallis, Oregon | Formula Student Engineer | Sept 2022 – June 2024

- **Suspension Design & Analysis:**
 - **CAD & FEA Validation:** Designed suspension clevises in **Siemens NX** and validated structural integrity using **Ansys FEA** to ensure compliance with Factor of Safety (FOS) targets.
 - **Analytical Verification:** Performed initial hand calculations in **Excel** to establish baseline geometry and verify computational results against first principles.
 - **Material Science & Adaptability:** Managed supply constraints by re-engineering components from 7075-T6 to 6061-T6 aluminium, accounting for differences in yield strength and material properties.
 - **Design Iteration:** Conducted FEA simulations to verify the material choice, managing the trade-off between mass and safety requirements.
- **CAD Modelling:** Designed suspension and steering components in Siemens NX with GD&T callouts for datums, positional tolerances for holes, and tolerance stack-ups with proper limits and fits to prevent interference between components.
- **Manufacturing:** Machined steel and aluminium components on **manual mills and lathes** and verified the dimensions against drawings using **calipers and micrometers**. Planned machining operations and adapted them to solve fixturing and tolerance challenges.
- **Sub-system assembly:** Assembled suspension, steering, and gearbox systems.
- **Vehicle Dynamics:** Performed vehicle setup including corner balancing, ride height, and wheel alignment (camber, toe, caster).
- **Failure Analysis:** Conducted post-test gearbox teardowns and inspections, identified gearbox failures due to material incompatibility (shaft hardness mismatch with needle bearings).

WORK HISTORY

Tualatin Valley Blueberries, Inc. | Administrative Assistant | Hillsboro, Oregon | Jun 2025 – Aug 2025

- Automated harvest data entry using Excel macros and Power Automate, coordinated intake and shipping of perishable inventory under tight, variable schedules.

Hillsboro School District | Locksmith Assistant | Hillsboro, Oregon | Summers 2023 & 2024

- Tested lock and door mechanisms against strict tolerances and ADA compliance standards; documented mechanical failures and performed repairs.

ADDITIONAL INFORMATION

- **Certifications:** Data Analysis and Processing in MATLAB (MathWorks, 2025)
- **Interests:** Mountain biking, hiking, fabrication projects, motorsport
- **Portfolio:** alan-swebsite.pages.dev

References available upon request