MINH BINH NGUYEN

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EDUCATION

Washington University in St.Louis, *McKelvey School of Engineering* August 2025 - May 2027

Bachelor of Science in Mechanical Engineering

Relevant coursework: Statics and Mechanics of Materials, Dynamics, Thermo-Dynamics, Fluid Mechanics, Machine Shop Practicum

SKILLS

Technical Skills: SolidWorks, NX CAD, SolidWorks Simulation (Static, Flow/CFD)
Workshop Skills: Mechanical Assembly, CNC Machining, Lathe Operation, Mill Operation, 3D Printing, Component Validation
Programming & Documentation: Matlab, R Studio, C++, Java, Technical Workflows, Engineering Drawings, Microsoft Office Suite

EXPERIENCES

WashU Racing (Formula SAE) St Louis, MO

Ergonomics & Braking System Team Member August 2025 - Present

- Contributed to the design and validation of the braking and ergonomic systems (steering wheel, pedal box), focusing on reliability, driver comfort, and ensuring 100% rules compliance.
- Helped achieve a 1.7g deceleration target (60-0 mph in ~1.6s) by redesigning the hydraulic circuit and integrating upgraded calipers, rotors, and master cylinders, exceeding the competition's four-wheel lockup requirement.
- Ensured system reliability through hands-on testing and documenting maintenance checks.

DePauw University Information Service Department Greencastle, IN

IT Helpdesk Intern August 2023 - May 2025

- Diagnosed and repaired hardware/software failures for 2,000+ users, performing component replacements and system reimaging to cut average downtime by 25%; also installed 50+ new PC units and maintained all campus A/V and printer systems, lowering annual repair costs by 18%.
- Documented 100+ detailed repair workflows in a centralized knowledge base, enabling self-service troubleshooting and reducing repeat support tickets by 35%

PROJECTS

Cervelo C5 Road Bike Custom Build & Optimization May 2024 - Present

- Managed a complete custom road bike build, from component sourcing and compatibility matching to the whole mechanical assembly and precise ergonomic fitting of the frame, drivetrain, and cockpit.
- Quantitatively validated the performance of mechanical upgrades (like ceramic bearings) using a power meter, applying a data-driven approach to confirm measurable gains in power transfer and efficiency.
- Designed a new integrated handlebar in SolidWorks, calculated its mass, and validated it using Flow Simulation (CFD) to analyze drag and FEA to study ride forces, preparing the design for iterative 3D-printed prototyping.

WashU FSAE Brake Rotor Redesign August 2025 - Present

- Contributed to the 4140 Steel brake rotor's design and FEA validation. The analysis confirmed that the design achieved a 2.37 times safety factor at 616 Nm of torque with only 0.013 mm of deflection.
- Supported the complete validation cycle for the newly manufactured 4.75mm rotors, including executing the critical on-track "bedding-in" procedure. This testing demonstrated superior stiffness and heat dissipation, ensuring reliable and consistent braking for aggressive performance, and passing the 4-wheel lockup test over multiple test days.

WashU FSAE Pedal Box October 2025 - Present

- Assembled a completed pedal box on SolidWorks. Ran FEA on both gas and brake pedals, validating the brake pedal's structural integrity against the 2000 N FSAE regulatory load and optimizing the throttle pedal's design.
- Redesigned a throttle linkage in SolidWorks after the previous part broke under high cable forces. Validated the new design with FEA, confirming a 2.24x Factor of Safety and minimal 0.036 mm displacement, preparing it for manufacturing and on-car testing.

WashU FSAE Steering Wheel Ergonomic Redesign September 2025 - October 2025

- Contributed to the ergonomic refinement of the steering wheel, using driver feedback and research to inform a new 3D-printed grip design. This new design focused on reducing the circumference to improve driver comfort and responsive handling.
- Analyzed grip materials, ensuring the chosen material met the driver's preferred texture while also being strong enough to handle a 196 N peak lateral steering force, guaranteeing both comfort and reliability

LEADERSHIP

Little 5 Collegiate Bike Race & Philanthropy Campaign - *Top-5 Finish & Team Leader* April 2023 - April 2024

- Led a five-member student cycling team and helped to coordinate a campus-wide fundraising campaign for countywide literacy initiatives, driving a cumulative $66,000 raised for United Way of Central Indiana and $32,000 for local food pantries