Hyunwoo Kwon

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Education

University of Illinois at Urbana-Champaign - 3.91/4.0 Urbana, IL
Bachelor of Science in Mechanical Engineering, Minor in CS and CSE (August 2019 - May 2025)

Advanced Technical Coursework: Finite Element Analysis, Numerical Analysis, Advanced Finite Element Methods, Data Structures and Algorithms, Data Science for Manufacturing Quality Control, Database Systems

Experience

Mechanical Engineering Intern, TSMC – Phoenix, AZ May 2024 - Aug 2024

- Collaborated with cross-functional engineering teams to solve backside pressure and deposition quality issues for PVD process equipment, demonstrating strong problem-solving and teamwork abilities
- Led CFD analysis across 24 fan configurations using ANSYS Fluent, effectively communicating findings to senior engineers that resulted in 10% reduction in air molecular contaminant levels
- Developed and implemented 4 detailed SOPs for testing protocols, training team members on proper execution to ensure consistent results
- Actively participated in six-sigma initiatives, contributing ideas during brainstorming sessions and presenting improvement recommendations to management

Research Assistant, Energy Transport Research Lab – Urbana, IL Sep 2024 - Present

- Designed automated thermal control system with LabVIEW-based PID control, collaborating with lab members to gather requirements and incorporate feedback throughout development
- Presented bi-weekly progress reports to research team, effectively communicating complex technical concepts
- Worked closely with lab members to perform nonlinear mechanical analysis using Abaqus FEA, ensuring accurate deformation models for data center cooling applications

Research Assistant, Wave Propagation and Metamaterials Lab – Urbana, IL Dec 2022 - Present

- Collaborated with material scientists to develop multi-physics COMSOL simulation models for auxetic materials, achieving 95% correlation with experimental data through iterative validation with lab members
- Designed and implemented an automated characterization system integrating force sensors and piezoelectric actuators, coordinating with electrical engineers to ensure seamless hardware-software integration
- Optimized auxetic metamaterial structures through FEA and experimental testing, presenting findings to cross-functional teams to guide material selection for energy absorption applications
- Led initiative to implement noise-reduction filters in signal processing workflows, improving measurement accuracy by 15% and enhancing team-wide data reliability

Technical Skills

Engineering Expertise: Thermal-mechanical design, CFD analysis, Finite Element Analysis (FEA), Heat transfer, Fluid dynamics, Solid mechanics, GD&T, Assembly, CAD, Prototyping
Software & Tools: ANSYS (Mechanical, Fluent), Abaqus FEA, COMSOL Multiphysics, SolidWorks, Fusion 360, AutoCAD, CREO, Siemens NX, MATLAB, LabVIEW
Programming & Data Analysis: Python, Java, C++, JavaScript, SQL, Git, R, Machine Learning, Tableau, Power BI, Microsoft Suites(Excel, Word, PowerPoint)
Project Management & Methodologies: Six Sigma methodologies, SPC, Technical writing, Project management, Problem solving
Languages: English (Fluent), Korean (Fluent), Chinese (Advanced)