Bhanu Sai Prakash Chikkavarapu

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Education

Northern Illinois University, IL
Master of Science in Mechanical Engineering — Aug 2024 – [Expected] May 2026

VR Siddhartha Engineering College, India
Bachelor of Technology in Mechanical Engineering — 2017 – 2021

Skills

CAD & Design	Analysis	Manufacturing	Software	Interests
DFM / DFA	FEA / CFD	Additive Manufacturing	SolidWorks / CATIA	Fluid Power
GD&T	Material Optimization	CNC Machining	Ansys	3D Animation
NPD / EPD	Root Cause Analysis	Sheet Metal	Blender	MATLAB

Research Experience

Graduate Research Assistant - Northern Illinois University — Aug 2024 – Present

- Designed a compact and modular ozone test setup, improving leak tightness and measurement accuracy by 15%.
- Evaluated commercial filters for indoor ozone removal under low temperature/humidity conditions.
- Developed innovative multi-stage filtration systems and flipping mechanisms for long-term filter efficiency.
- Built custom pressure/flow measurement setups and integrated DAQ for real-time data acquisition.
- Utilized SEM and XPS techniques to analyze filter surface changes at the nanoscale.

APSCO, Inc.

Mechanical Engineer Intern — June – Aug 2025

- Designed a destructive inlet air filter system for mobile compressors,taking design from concept to prototype.
- Collaborated with cross-functional teams to evaluate multiple design concepts.
- Developed prototype test plans and selected testing equipment to validate key performance parameters.
- Reduced filter system overall size by 27% and increased service lifetime by 15× with staged filtration.

Design Cube Engineering Solutions Pvt. Ltd.

Mechanical Design Engineer — July 2021 – Aug 2024

- Designed hydraulic reservoirs with integrated cooling and filtration systems for bulk feed trailers.
- Designed hydraulic manifolds, reducing hoses and leak paths.
- Reduced part count and weight by 15–20% and assembly time by 18% through DFM/DFA.
- Performed FEA in Ansys to optimize material usage, achieving 10–17% savings.
- Created 3D/2D CAD models and drawings with BOMs.
- Developed assembly fixtures to reduce assembly time by 25%.
- Built automated testing setups using Arduino, relays, and hardware components for rapid prototype validation.

Projects

- **Multi-Purpose Farming Machine:** Designed a 1HP electric farming machine for ploughing, weeding & spraying.
- **Hydraulic Die & Punch Machine:** Built a precision punching machine for AL sheets using hydraulic actuation.
- **Smart Conveyor:** Designed a conveyor system with Orientation and Alignment features for U-shaped parts.
- **80CC Motorized Bicycle:** Integrated I.C. engine with a bicycle for hybrid propulsion, increasing travel range.