

Patrick Andrus

Industrial Designer and Product Development Engineer

Executive Summary

Industrial Designer and Mechanical Engineer with a strong track record of crafting user-centered, manufacturable products across consumer, medical, and toy-adjacent sectors. I approach fabrication methods not as limitations, but as creative constraints that shape better design outcomes. My hands-on experience with digital and traditional fabrication fuels iterative concept development and tangible exploration. I blend playful innovation with engineering rigor to lead cross-functional teams and deliver products that connect meaningfully with users.

Skills

- Project Management
- Design Research
- Prototype Development
- 2D Concept Sketching and Rendering
- 3D Modeling and Rendering
- Mechanism and Plastic Part Design
- Design for Manufacturing
- Electro-mechanical Integration
- BOM and Technical Documentation

Digital Tools

- SolidWorks, Creo/ProE, Fusion 360
- ZBrush
- KeyShot
- SketchBook
- Abaqus & SolidWorks FEA
- Adobe CC (Photoshop, Illustrator, etc.)
- Arduino Programming

Fabrication & Prototyping

- Paper & Foam Board Modeling
- Foam & Clay Sculpting
- SLA, SLS, FDM 3D Printing
- Laser & Waterjet Cutting
- Horizontal Lathe & Vertical Mill
- MIG & TIG Welding
- 3-axis CNC Router

Contact Details

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Experience

Industrial Design Engineer II (Consultant)

Metaphase Design Group | 10/21 - Present

- Developed new product concepts across consumer, industrial, and medical sectors integrating ergonomics, manufacturability, and user-centered design.
- Led global and domestic user research initiatives, including contextual inquiry and behavioral observation, to uncover actionable insights and validate designs.
- Engineered breadboard models to test functionality and usability with end users.
- Played a key role to expand the company's services to engineering consulting and captured over \$300k in project budgets.

Mechanical Engineer II

Sloan | 11/20 - 10/21

- Engineered custom adaptations of standard products to meet diverse user needs and site-specific constraints.
- Contributed to new product development efforts from concept generation to production.
- Supervised interns and mentored new international colleagues, boosting product customization output by 10% through improved training and workflow alignment.

Industrial Design Intern (Playground Development)

Boys & Girls Club of Round Valley | 05/19 - 07/19

- Identified play behavior patterns of children aged 5–10 through design research studies.
- Developed playground concepts through collaborative ideation, scale modeling, sketching, and 3D modeling to review with key stakeholders.
- Performed engineering analysis to validate final design integrity and safety compliance of a primarily wood playground.

Mechanical Design Engineer (R&D)

Katalyst Surgical | 11/15 - 04/17

- Co-led development of a novel surgical device, designing and integrating electro-mechanical subsystems, device chassis, disposable tubing set, and surgical cart.
- Improved select manufacturing processes, increasing output by 50%.
- Performed product testing to validate performance against Product Requirements Documents (PRDs) and regulatory standards.

In-house Freelance Designer

MyMiniFactory | 06/15 - 09/15

- Created original 3D-printable products—including cosplay props, action figures, and toys optimized for FDM, balancing aesthetics with functional play.
- Developed innovative manufacturing techniques to push the boundaries of desktop 3D printing, balancing aesthetic appeal with printability to enable seamless print-to-play functionality.

Design Engineer (Contractor)

DRS Technologies through Aerotek, Inc. | 07/14 - 06/15

- Refined CAD models and technical drawings for heavy vehicle systems, improving documentation accuracy and manufacturability.
- Designed robotic welding fixtures for vehicle chassis manufacturing.
- Led the implementation of a new project lifecycle management (PLM) database.

Education

Master of Industrial Design

Arizona State University

Graduated: 07/2020

Master of Science, Engineering, Aerospace and Mechanical Engineering

Saint Louis University

Graduated: 05/2014

Bachelor of Science, Mechanical Engineering and Minor in Music

Saint Louis University

Graduated: 05/2012