

Fuhao Lu

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Education

Columbia University – master’s degree, Mechanical Engineering

New York, NY, Jan 2021 - May 2022

Purdue University – bachelor’s degree, Mechanical Engineering

West Lafayette, IN, Aug 2016 - May 2020

Skills

- **Design** – SolidWorks, Siemens NX, Inventor, *Product design, GD&T, topology, tolerance analysis, DFM/DFA, material strength*
- **Manufacturing** – 3D printing, CNC machining, laser cutting, injection Molding, forming, stamping, casting, welding, embroidery,
- **Quality Control** – Six Sigma Green Belt, DOE, SPC, Data Analysis, root cause analysis, statistical analysis, control chart
- **Hand fabrication** – CNC machining, 3D printing, laser cutting, wiring, casting, drilling, welding, tinning, machine embroidery
- **Coding/programming** – Python, Data Analysis, openSCAD, Raspberry Pi, Microsoft Office, WordPress

Academic Projects

Columbia University - **Robot Design Project**

Sep 2021 - Dec 2021

- Designed and built a two-legged robot from sketch to final product – make it walk, dance, and interact with people; *responsible for mechanical design, phototyping, electronics design, programming, and testing*; utilized 3D printing and laser cutting to make the parts
- Devised major mechanical (arm, leg) and electrical components (battery, camera supporter) design, and supporting components including motor brackets, battery supporters, and so on; developed tolerance analysis and durability testing for major modules
- Wirelessly control robot with Raspberry Pi, designed movements with Python, and used camera to take photos and detect obstacles
- Developed market research of the robot as a consumer product for kids with consideration of safety, cost, durability and so on

Columbia University - **Digital Design and Manufacturing**

Jan 2021 - May 2021

- Designed a flip cover box by Python and SVG code and automatically generate a box’s layout with customizable dimension, figures, and text; Utilized laser cutter to manufacture the box
- Designed a lampshade and simulate the feasibility of 3D printing model; printed out the final prototype; developed drop test to examine the mechanical structure
- Designed creative embroidery figures for clothing, and used Janome machine to sew the pattern on clothes
- Developed topology optimization and analyze 3D model of chair, table, and bike to reduce weight by about 30%, 40%, 20% while remain its functionality

Professional Experience

Tesla - Intern of Manufacturing Design Engineer

Jun 2021 - Sep 2021

- Facilitated team of 5 to launch new computer vision quality check system in gluing Robot at Painting workshop; communicated with vendors to find the most suitable system; increase manufacturing efficiency by 10%
- Developed a scheduling program with Python that can automatically arrange more than 60 employees’ working schedule with various parameters, which lead to a 10 hours’ time saving every month
- Participated in analyzing and optimized the manufacturing process by using monitoring system; record and diagnose any unusual activity
- Participated in formulating digital manufacturing factory concepts with two senior and built virtual models to illustrate the concept

Quicktron Intelligent Technology Co., Ltd - Intern of Mechanical Design Engineer

Sep 2020 - Dec 2020

- Participated designing and testifying mechanical structure of new generation AGV robot in team of 12, responsible for *robot testing ramp, charging port door, sensor supporter, housing and so on*
- Communicated with assembling technicians and collected 20+ issues that slow the assembly; Redesigned and lead to a 18% speed improve
- Utilized topology to improve driving parts’ weight for 10%; prototyped robot by using CNC machining and 3D printing
- Developed DOE with vendors to improve the quality of products, solved bottleneck problem in manufacturing process and reduced cycle time
- Analyzed and solved 5+ interference problems of mechanical parts in different models of AGV robots
- Diagnosed returned robots, collected issues, and wrote maintenance reports for future improvements

Cooper Tire Corporation - Intern of Quality Control Engineer

Jul 2019 - Aug 2019

- Deployed fishbone diagram in a group of 5 to define problems; increased manufacturing efficiency and cut costs by \$2000/month
- Carried out quality check process by deploying six sigma, control chart, and Cpk; coordinated team with vendors to solved problems
- Facilitated team of 15 to launch new quality control system; constructed 2 comparison reports to show effects of new quality control system; brainstorming every week on system improvements

Extracurricular Activity

Course Assistant

Jan 2022 – May 2022

Assisting professor [Hod Lipson](#) teaching a graduate level course (Digital Manufacturing) with 120+ students; training students for machine (3D printer, laser cutter, embroidery machine, etc.); developing lab experiments and answering students’ questions on course assignment

Tesla Hackathon – Digital Manufacturing System

Rate 20%

Jul 2021

Patents:

Forming Machine for Preparation of Tires: FU DENGKE; LU FUHAO (2014). China Patent No. CN 201410503150.4

Sep 2014

Safe Swing: LU FUHAO (2014). China Patent No. CN 201410447463.2

Aug 2014

Spoken Languages: Chinese (Native), English (Fluent)

Hobbies: Piano (Certificated Level 10), cucurbit Flute, snowboarding, Ping-pong, reading, NBA 2k