Jack Zhang

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Education

University of Toronto – Bachelor of Applied Science – Mechanical engineering + PEY CO-OP   Expected May 2028

Experience

Design Team Member, University of Toronto Aerospace Team – Toronto, ON   September 2023 – Present
- Managed all 3D printing requests, overseeing end-to-end operations from design to fabrication
- Implemented a Notion tracking system, reducing manufacturing lead time by half and enhancing cross-division communication.
- Developed specialized jigs for the precise assembly of composite components, including sanding rigs that improved aerodynamic performance by optimizing fin angles.

Laboratory Technologist, South Surrey School District – Surrey, BC   September 2022 – May 2023
- Developed and implemented a hands-on chemical reaction lab used for 100+ students annually, and extended the lifespan of lab kits by 50% through iterative design improvements to the kits.
- Reconfigured and streamlined lab procedures, improving lab completion rates and reducing material usage, leading to more efficient and sustainable operations.

Founder & Lead, 3D Printing Club, Elgin Park Secondary – Surrey, BC   September 2019 – May 2023
- Launched and expanded the 3D Printing Club to 40 members, overseeing design competitions and public sales, raising $2,000+ for new equipment through community outreach.
- Conducted weekly FDM printing and CAD training sessions, mentoring over 10 students per week in 3D printing technologies and design principles.

Projects

Non-Structural Composite Aerobody
- Designed and manufactured a non-structural composite airframe for a liquid rocket, enabling access to internal components without disassembly through modular panel implementation.
- Optimized production by introducing negative mold manufacturing, increasing precision and cutting manufacturing time by 50%.
- Achieved a 15% reduction in airframe weight through design optimization using Ansys, enhancing overall rocket performance.

Custom-Built 3D Printer
- Engineered a custom 3D printer with Klipper firmware, enabling wireless control and achieving 2x faster print speeds than comparable printers at the same price point.
- Integrated a chamber heater that reaches 70°C in under 10 minutes, reducing material warping and cutting heat-up time by over 50%.
- Designed a triple Z-belt system to eliminate the need for manual bed leveling, ensuring consistent first layer print quality.

Skills

Programming: Python, Java, HTML, GCODE, MATLAB
Software Tools: SolidWorks, Fusion 360, Ansys, Microsoft Office Suite
Advanced Manufacturing: 3-Axis CNC, Laser Engraving, FDM & SLA 3D Printing