Isaac Newcomb

idn6@cornell.edu | (518) 418-5518 | isaacdnew.com | linkedin.com/in/isaacdnew

EDUCATION

Cornell University, College of Engineering, Ithaca, NY — May 2023
Bachelor of Science, Mechanical Engineering | Music Minor | GPA: 3.749

Cornell University, College of Engineering, Ithaca, NY — May 2024
Master of Engineering, Mechanical Engineering | Design Focus | **GPA: 3.665**

EXPERIENCE

Drinking Bat Robot — Bio-Inspired Fluid Lab, Cornell University, Ithaca, NY — August 2023 – May 2024
- Iterated a robot to mimic bat flapping mechanics, detailing the design in a 23-page report
- Optimized linkages and support structure to flap both wings reliably while minimizing weight and vibrations

Kinetic Engineer — Combat Robotics at Cornell, Ithaca, NY — August 2021 – May 2024
- Designed and manufactured four 12-lb robots over the years, reaching semifinals at National Havoc Robot League
- Simulated weapon spin-up events in MATLAB to select brushless motors and predict power usage
- Created a parameterized timing belt pulley in Fusion 360, enabling iteration and reuse across 4+ projects

Mechanical Design Engineer Intern — ASML, Wilton, CT — May – August 2023
- Revealed ways to speed up a sub-micrometer-precision gripper, designing a test rig to simulate in-situ forces
- Integrated **mechatronics** to control tests, improving precision by reducing human involvement
- Presented design reviews to 20+ stakeholders; composed a **30+ page report** detailing my process and results

Kinetic Subteam Lead — Combat Robotics at Cornell, Ithaca, NY — July 2022 – May 2023
- Built camaraderie and dedication in my team of 8 through communication, accountability, and empowerment
- Planned iterative, risk-reducing milestones to set and keep pace with our tight timeline

Founding Engineer — Combat Robotics at Cornell, Ithaca, NY — October 2019 – May 2022
- Reimagined CRC's organizational structure into its current paradigm: subteams, projects, timelines, best practices
- Wove creativity and clear requirements into our culture, with an eye toward **manufacturability** and **serviceability**
- Developed clean, flexible templates for documentation, BOMs, budgeting, team rosters and more
- Led hands-on Fusion 360 workshops to **teach** organized, parametric CAD skills

Head R&D Engineer, Master 3D Printer — Tri-lakes vs COVID-19, Lake Placid, NY — March – October 2020
- Merged features of existing 3D-printable face shield visors, prioritizing safety and proven success
- **Iterated** with feedback from local healthcare professionals, improving comfort, reliability, and sanitation
- Maximized throughput and quality of hobbyists' 3D printers by providing tuned models, settings, and support
- Collectively manufactured and distributed **over 4500** face shields to the Tri-lakes area in the height of COVID

SELECTED PROJECTS

SnapSlide — Self-tuning slide whistle, isaacdnew.com/projects/snapslide — August – November 2021
- Used FFT to get an Arduino to identify pitch, automatically adjust the slide, and keep notes in key
- Created as part of Mechatronics class: budget for parts not included in kit was $20

Ice Keys — Melodica-like wind instrument, isaacdnew.com/projects/ice-keys — September 2018 – August 2021
- Created 3 high-fidelity functional prototypes of a portable, acoustic, flute-sounding keyboard instrument
- Pushed the limits of thermoplastic FFF 3D printing **by printing almost all parts**
- Scripted with Inventor's **iLogic** to generate complex, note-varying geometry from a desired set of notes
- Ran experiments to link pipe length to note pitch (after finding that ideal formulas were inaccurate)

SKILLS

Fabrication: Manual lathes and mills (advanced); 3-axis CNC (intermediate); MIG welding (intermediate); hand/power tools (advanced); electronics (advanced, incl. soldering, crimping, multimeters, oscilloscopes, etc.).

Software: Fusion 360 (advanced), Inventor (advanced), Siemens NX (advanced), ANSYS (intermediate), COMSOL multiphysics (intermediate), MATLAB (advanced), Python (intermediate), Java (intermediate).