

Isaac Newcomb

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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 Expected May 2024
Master of Engineering, Mechanical Engineering | Design Focus | GPA Pending

EXPERIENCE

- Drinking Bat Robot** — Bio-Inspired Fluid Lab, Cornell University, Ithaca, NY August 2023 – Present
- Iterated a robot that flies like a bat scooping water from a pond: angle of attack increases at bottom of wing travel
 - Optimized linkages and support structure to flap both wings reliably, minimizing weight and vibrations
- Kinetic Engineer** — Combat Robotics at Cornell, Ithaca, NY August 2021 – Present
- 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:** Bridgeport 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: Static Structural, Steady-State Thermal, Fluid Flow), MATLAB (advanced), Python (intermediate), Java (intermediate).