

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
Course Highlights: Mechanics of Engineering Materials, Mechatronics, System Dynamics, Fluids and Heat Transfer Lab, Foundations of Robotics, Computers in Music Performance, Sound Design

EXPERIENCE

- Combat Robotics at Cornell (CRC)**, Ithaca, NY — Kinetic Subteam Lead July 2022 – Present
- Built camaraderie and dedication in the team by inspiring, supporting, and holding them accountable
 - Set and kept pace by planning iterative, risk-reducing milestones and adapting them as needed
 - Helped team members grow as engineers and as people by providing positive and constructive feedback
 - Resolved interpersonal conflicts and strengthened relationships through dialogue and compromise
- CRC**, Ithaca, NY — Kinetic Engineer August 2021 – Present
- Designed and manufactured a 12-lb robot in a small team; placed 4th at Norwalk Havoc Robot League
 - Simulated weapon spin-up events in MATLAB to select brushless motors and predict their current draw
 - Balanced budget and supply-chain constraints while compiling bills of materials, down to the last screw
 - Created a parameterized timing belt pulley in Fusion 360, enabling iteration and reuse across 4 projects
 - Presented technical progress to the rest of CRC at weekly meetings, explaining and justifying decisions
- CRC**, Ithaca, NY — Founding Engineer October 2019 – May 2022
- Joined at the beginning: no funds, no workspace, no class credit. Adapted and grew constantly; loved it!
 - Reimagined CRC's original organizational structure into the subteam/committee paradigm still used today
 - Created templates (also still in use) to guide future documentation, support meetings, and unify our brand
 - Promoted organized, parametric design habits by preparing and leading hands-on Fusion 360 workshops
- Tri-lakes vs COVID-19**, Lake Placid, NY — Head R&D Engineer March – October 2020
- Merged features of 3D-printable face shield visor designs, 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 with tuned models, settings, and support
 - Collectively manufactured and distributed over 4500 complete face shields to the Tri-lakes area
- Operation Namaste**, Lake Placid, NY — Rapid Prototyping Consultant June – August 2019
- Prototyped a proof-of-concept foldable 3D printer designed for quick setup and teardown
 - Used that 3D printer and Fusion 360 to iterate prosthetic hand prototypes, based on interviews and feedback from a patient and a team of prosthetists — the patient loved the final product!

SELECTED PERSONAL 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
- Designed and built 3 prototypes of a portable, acoustic, flute-sounding keyboard instrument
 - Used Inventor and iLogic to generate complex, note-varying geometry from a list of desired pipe lengths
 - Ran experiments to link pipe length to note pitch (after finding that ideal formulas were inaccurate)
 - Pushed the limits of thermoplastic FDM 3D printing by printing almost all parts (as a fun exercise)

OTHER SKILLS

Fabrication: Bridgeport lathes and mills; 3-axis CNC; MIG welding (steel wire feed); hand and power tools; electrical / electronics (soldering, wire termination, multimeters, oscilloscopes).
Software: ANSYS (Static Structural, Steady-State Thermal, Fluid Flow), GIMP, Python, Java, Marlin firmware