Cole Bregman

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Education

Columbia University **New York, NY · 2023 – 2027**
B.S. Mechanical Engineering, Minor in Computer Science | GPA: 4.0 | Dean's list | Tau Beta Pi

Work Experience

Walt Disney Imagineering **Glendale, CA**
Ride Development Engineering Intern June 2026 - August 2026
- Designed station gates for upcoming attractions using solidworks, matching design intent and safety standards.
- Conducted FEA, FMEA and hazard analysis for station gate systems & vehicles on upcoming attractions.

Apple Inc. **Cupertino, CA**
Manufacturing Design Engineering Intern May 2025 - May 2026
- Delivered $2.8M+ in savings by leading DFM, tooling, and design improvements such as hot-runner conversion, CNC and polishing cycle-time reductions, physical vapor deposition (PVD) elimination, and a 71% raw-material cost cut.
- Raised assembly yield (65% → 99.7%) by adding computer-vision feedback and reducing tolerance stack in fixturing.
- Reduced assembly time 50% and cost 40% through design changes to qualify laser welding over mechanical fastening; cut CNC cycle time 260s, reduced part count, and coordinated validation across PD, EE, and FATP Ops.
- Pioneered PVD-free passivation surface finish for corrosion resistance and tunable color by leading R&D end to end; subject matter expert consultation, trial design, on-site vendor experiments, and the industrial-design review.
- Traced a critical strength failure to hydrogen embrittlement through root-cause analysis; >2x yield strength by implementing a bakeout; moved parts from failing to passing FEA requirements.

Eikon Therapeutics **Hayward, CA**
Mechanical Engineering Intern June 2024 - August 2024
- Increased laser precision 44.4% and cut alignment time 90% by building an automated optical test rig (Python controlled hardware, beam profiler, custom GUI) for single-molecule tracking microscopy.

Design Visionaries **San Jose, CA**
Design Intern May 2023 - August 2023
- Filed 4 USPTO provisional patents for small businesses by designing and prototyping medical and consumer devices in Siemens NX, validated with DFM analysis.

Research and Club Experience

Musculoskeletal Biomechanics Lab **New York, NY**
Undergraduate Researcher September 2024 - Present
- Built the anatomical CAD models used for printing and testing by other Columbia labs on the NITRO NOVA knee-replacement project; designed test fixtures and a LabVIEW DAQ system for implant validation.

Creative Machines Lab **New York, NY**
Undergraduate Researcher February 2024 - Present
- Redesigned a food 3D printer for a Michelin-star chef, converting the extrusion system from a syringe to a pressurized hopper-and-auger feed for larger volumes; built a Python G-code pipeline to improve print consistency.

Columbia Makerspace **New York, NY**
Superuser Volunteer January 2024 - Present
- Host weekly office hours and train students on fabrication equipment (laser cutter, 3D printer, waterjet, woodshop).

Engineering and Design Projects

Handheld Audiobook Player (View Here)
- Audiobook player built off a raspberry pi and python featuring auto-transcription for quote capture, bookmarking, and speed control; hardware prototype completed using 3D-printing for enclosure design.

Pinball Machine
- Built an F1-themed pinball machine by opening up machines at a local pinball museum to reverse-engineering commercial components, designing a playfield in Fusion360, and integrating CNC-machined parts with electronics.

Multi Resistance Mechanism Foot Brace
- Led 6-person team to design and prototype a multi-resistance foot brace for foot drop patients, conducting user research with MS patients and validating with a working prototype.

Skills & Interests

Software: Siemens NX • Solidworks • Blender • LabVIEW • JMP • Python • C • Java • Raspberry Pi • Adobe Suite
Manufacturing: DFM • DOE • FMEA • Tolerance Analysis • Injection Molding • 3D Printing • CNC • Laser Cutting
Hobbies: Powerlifting • DJing • 3D Modeling • Reading • Board Games • Needlework • Book Binding • Making