# Hugo Onghai

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## Education

**Cornell Tech, Cornell University** | New York, NY *Expected May 2026*

*MEng in Electrical and Computer Engineering — GPA: 4.0*

- Cornell Tech Merit Scholarship (2025)
- **Relevant Coursework:** Applied Machine Learning, Distributed Optimization for ML/AI, Applied Digital ASIC Design, Modeling Under Uncertainty, Product Studio

**University of California, Los Angeles (UCLA)** | Los Angeles, CA *June 2025*

*BS in Materials Engineering, specializations in Electronic Materials & Math of Computation — GPA: 3.975, summa cum laude*

- 5x Dean's Honor List, Knapp Scholarship Fund (2023), Chin Family UCLA Endowed Engineering Scholarship (2024)
- **MSE/EE Coursework:** Machine Learning for MSE, Computer Simulations for Materials, Semiconductors Physics, Semiconductor Processing, Electron Microscopy, Electromagnetics, Electronic Circuits, Ceramics & Glasses, Metallic Alloys, Thermodynamics
- **Math/CS Coursework:** Differential Equations, Discrete Structures, Honors Proof-Based Linear Algebra, C++ Data Structures

## Technical Skills

- **Programming Languages:** Python, LaTeX, Markdown, MATLAB, C++, Java, YAML, MongoDB Query Language, Go
- **Software Systems and Tools:** Git, GitHub, Overleaf, MikTeX, MS Office Tools, Powershell, Anaconda Prompt, Arch Linux
- **Materials Science Equipment:** EIS, CV, XRD, XRF, OM, SEM, TEM, Tensile Test, 3-Point Bend Test, Impulse Excitation, Plasma Oven, Photolithography, Dry/Wet Etching, LCPVD, 3D-Printing, CAD Autodesk Fusion

## Professional/Research Experience

**Software Engineer Intern** | The Materials Project | *Lawrence Berkeley National Lab, CA* *June 2025 – August 2025*

- Developed and published an open-source python package, MPCite, interfacing with the DOE Office of Scientific and Technical Information's E-Link API to submit, update, and validate DOI numbers for 100,000+ database entries
- Orchestrated with Dagster, parallelized with dask, and queried internal AWS database with pymongo and MongoDB Atlas (MQL)
- Supported CI/CD efforts with Git source-controlling and by deploying a documentation GitHub Pages website with mkdocs
- Built automated linting, testing, and publishing workflows with GitHub Actions, that uncovered 2 major bugs in the DOE's API

**IBM Research Scholar** | *Ab Initio* Simulations Lab @ UCLA | *Los Angeles, CA* *September 2023 – June 2025*

- Earned competitive scholarship from IBM to conduct undergraduate research, through the Semiconductor Research Corporation Undergraduate Research Program, and to present to faculty at UCLA's Undergraduate Research Week
- Wrote in-house scripts for MSPARC, a real space density functional theory package for MATLAB, to better analyze band structures of exotic electronic materials

**DAAD RISE Intern** | Forschungszentrum Jülich | *Jülich, Germany* *June 2024 – September 2024*

- Awarded internationally competitive scholarship to research at Forschungszentrum Jülich, one of Europe's largest research centers
- Demonstrated a 100% improved accelerated aging tests process and setup on 3D-printed, flexible neural implants
- Performed failure analysis with electrochemical impedance spectroscopy, charge injection capacity, and optical microscopy
- Analyzed 90 days of time series performance data across over 20 implants with galvani, Matplotlib, seaborn, NumPy, and pandas

## Projects

**MPCite (Python, YAML, pymongo, Dagster)** *August 2025*

*A Python package to submit new database entries to OSTI's DOI Number Service*

**Chalk 2.0** *June 2025*

*A senior capstone project to characterize, manufacturing, and validate superior blackboard chalk*

- Led a comprehensive market landscape assessment of the chalk industry, benchmarking production methods, environmental footprint, and user health considerations across premium and value tiers
- Applied ASTM industry-standard materials characterization techniques (XRF, 3-point Bending, XRD, Archimedes Porosity) to quantify composition and microstructure, linking results to writing performance metrics (e.g., contrast, dusting, break strength)
- Prototyped a manufacturing process for artisan chalk that surpassed value tier writing quality, producing up to 10 sticks in 2 hours

**Manimolcov (Python, Git, Manim)** *Decemeber 2024*

*A Python package to visualize molecular graph convolutions for educational purposes using 3Blue1Brown's Manim*

- Built functions to import molecule files into the Manim animation engine and to perform graph convolutions on their structures featurized with one-hot encodings

## Additional Work Experience

**Student DJ** | UCLA Women's and Men's Volleyball Marketing Team | *Los Angeles, CA* *May 2023 – June 2024*

- Curated, played, and remixed music for UCLA D1 Men's and Women's Volleyball Games
- Worked with stadium sound systems and live performers in a fast-paced, high-intensity work environment

**Gravedigger and Ground Laborer (Seasonal)** | Cedar Hill Cemetery | *Port Jefferson, NY* *August 2023 – June 2024*

- Performed 40+ funeral and burial services in first 2 months, helping people in emotional distress during the hardest times of their lives