

Bowen Yu

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Education

Massachusetts Institute of Technology (Cambridge, MA, United States)

Aug. 2024 — Present

- **Major:** Physics (*Course 8*), Artificial Intelligence and Decision Making (*Course 6-4*)
- **Selected Coursework:** Machine Learning, Introduction to Deep Learning, Fundamentals of Programming, Design and Analysis of Algorithms, Low-level Programming in C and Assembly, Computational Architecture, Linear Algebra and Optimization, Quantum Physics I, II & III, Physics of Solids, Statistical Mechanics II, Quantum Field Theory I

Peking University (Beijing, China)

Sep. 2023 — Jul. 2024

- **Major:** Physics
- **Selected Coursework:** Introduction to Computation, Data Structure and Algorithms, Classical Mechanics, Quantum Mechanics, Thermodynamics and Statistical Mechanics, Quantum Statistical Physics, Lie Groups and Lie Algebras

Awards & Honors

International Physics Olympiad (IPhO) Gold Medalist

Jul. 2023

- Represented China at the [53rd International Physics Olympiad](#) (one of 5 team members)
- Ranked [1st place](#) (Absolute Winner) in the world and awarded a Gold Medal

Chinese Physics Olympiad (CPhO) Gold Medalist

Dec. 2021 & Oct. 2022

- Awarded the Gold Medal in the final of the [39th Chinese Physics Olympiad](#), and selected for the national team
- Awarded the Gold Medal in the final of the [38th Chinese Physics Olympiad](#)

Working Experiences

AI & Material Science Research Assistant @ MIT (Cambridge, MA, United States)

Jan. 2025 — Present

- Extensively leveraging various AI techniques in material and defect engineering, including convolutional neural networks, reinforcement learning methods, generative models, and machine learning force fields (MLFF), and coauthored two papers in machine learning and generative model-powered material engineering
- Supervisor: Professor [Mingda Li](#), [Quantum Measurement Group](#)

Large Language Model Data Researcher @ ByteDance (Beijing, China)

Aug. 2025 — Sep. 2025

- Served as the Seed LLM data partner, leading the design of benchmarks on 500+ physics problems (university to PhD level) and evaluating the physical reasoning abilities of state-of-the-art large language models

AI Workload Deployment Intern @ Intel Corporation (Shanghai, China)

Jun. 2025 — Jul. 2025

- Researched low-level GPU memory layouts and the CuTeDSL framework; analyzed its lowering process to backend kernels using GEMM as a case study, informing optimizations for AI workload deployment

Publications

[†] → Equal contribution; * → Corresponding author

- J1. Cheng^{†,*}, M., Fu[†], C.-L., **Yu[†], Bowen**, Rha, E., Chotrattanapituk, A., Abernathy, D. L., Cheng, Y. & Li*, M. A Foundation Model for Non-Destructive Defect Identification from Vibrational Spectra. *In Review* (2025).
– Paper available at: [arXiv:2506.00725](https://arxiv.org/abs/2506.00725).
- J2. Cheng^{†,*}, M., Luo[†], W., Tang[†], H., **Yu, Bowen**, Cheng, Y., Xie, W., Li, J., Kulik, H. J. & Li*, M. Enhancing Materials Discovery with Valence Constrained Design in Generative Modeling. *In Review* (2025).
– Paper available at: [arXiv:2507.19799](https://arxiv.org/abs/2507.19799).

Projects

PaperPlay (HackMIT 2025)

Sep. 2025

- Working in a group of four, developed a web platform that converts hand-drawn Mario-style levels into playable platformers in less than 5 minutes by leveraging OpenCV-based image recognition and deployed via Modal
- Won **2nd place** in the Modal sponsor track
- Demo available at: <https://demo-description.vercel.app/>; code available at: <https://github.com/HACKMIT-2025>

Skills

- **Languages:** English (*fluent*), Chinese (*native*), Cantonese (*basic*), Spanish (*basic*)
- **Programming Languages:** C/C++, Python, Bluespec, RISC-V Assembly, LaTeX
- **Libraries:** PyTorch, NumPy, Matplotlib, ASE, PyMatgen, Matformer, MACE, Triton, CUTLASS
- **Technologies:** Linux, Git, GitHub, Docker, SSH, VSCode, Jupyter Notebook