Yile Du

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EDUCATION

Williams College **Williamstown, MA**
Majors: Computer Science & Biology (Overall GPA: 3.9/4.0) *Graduation Date: May 2027*

- **Relevant Coursework**: Data Structures & Advanced Programming, Computer Organization, Algorithm Design & Analysis, Computational Biology, Robotics & Data Fabrication.

Harvard University **Cambridge, MA**
Visiting Undergraduate Student *Sep 2025 – May 2026*

- **Relevant Coursework**: Optimal Control and Reinforcement Learning, Machine Learning in Computational Biology, Theoretical Linear Algebra and Real Analysis.

SKILLS

Technical: Python, PyTorch, C++, C#, C, Java, C, Unix/Linux, Assembly, Unity, Construct3, React Native, OpenCV, ROS2, SolidWorks, Kicad, Arduino.

Other: Native Chinese Speaker, English, Intermediate Cantonese, Advanced Japanese (Passed JLPT N2)

PROJECTS

Infinite Runner Game: *Dodge the Harvard Scooter*; Group Project, Harvard University *Sep 2025 – Present*

- Collaborating with peers from the Harvard Game Development Club to design an infinite runner game with Construct 3. Familiar with game development process, from prototyping to playtesting and iteration
- Designed and implementing the core mechanics of the game with Javascript. Assisted main story-writing.

Platform Game; Individual Project, Williams College *Dec 2024 – Present*

- Developed a 3D platform game using C++ and C# in Windows environment.
- Improving the game objects and animation using Unity to enhance game realism and functionality.
- Enhanced gameplay by adding a First-Person view mode for specific maps.

Reinforcement Learning RNA-folding tool design, Williams College *Mar 2025 – Present*

- Designed a deep reinforcement learning algorithm for RNA-folding, focusing on energy-stability.
- Integrating neural networks and Monte-Carlo Tree Search into the original double-Q learning algorithm.
- Available at https://github.com/Harry-Du1/Reinforcement-Learning-tool-for-RNA-folding.git.

WORK EXPERIENCE

Harvard University Rivas Laboratory **Harvard University**
Research Assistant *Sep 2025 – Present*

- Collaborated on a research project with Prof. Elena Rivas to design a generalizable deep learning model for RNA secondary structure prediction in Python, using a framework inspired by OpenFold.
- Evaluating and testing deep learning models developed in the Rivas Lab and trained on the RNA3DB dataset.
- Building an algorithm to transform RNA3DB data and alignments into specific inputs for OpenRNAFold algorithm.

Williams College Aalberts Laboratory **Williams College**
Research Assistant *Jan 2024 - Aug 2025*

- Independent research with Dr. Daniel Aalberts, discovering various properties in RNA-folding.
- Conducted statistical analysis of RNA folding using data from UNAfold, RNAstructure, and LinearFold stochastic samples, with custom Python and R scripts. Analyses included loop likelihood prediction, base-pair correlations, and MFE structure roles in partition function.
- Contributing to a fractal-based RNA folding model this summer using custom python code.

Computer Science Teaching Assistant **Williams College**
Teaching Assistant *Sep 2024 – Dec 2024*

- Host teaching sessions to illustrate concepts in Java, helping ~30 students each week.
- Test, troubleshoot, grade, and give tailored feedback to 10 students' coded lab assignments each week.
- Explain class material alongside the professor within lab sections.

LEADERSHIP/VOLUNTEERISM

Harvard Undergraduates Robotics Club **Harvard University**
Software Team Member *Sep 2025 - Present*

- Contributed to the design of a Mars Rover for the University Rover Challenge.
- Developing object detection algorithms for ZED stereo cameras using OpenCV and custom neural networks in Python. The team repo is available at https://github.com/djordjeivanovic11/rover.git.