JUNQI LU

GitHub | Google Scholar | Personal Blog
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Beijing, China

EDUCATION

Beijing Institute of Technology, Beijing, China 2024.9 - 2026.6 (expected)
Second Bachelor's Degree in Computer Science | Rank 1/10

- **GPA: 3.2/4.0**. Completed **44.5 credits** of core CS coursework in the first year alone (2024-2025), demonstrating exceptional capability in handling high-intensity academic loads.
- **Selected High Scores:** Linux System Programming (**94**), Machine Learning Fundamentals (**93**), Computer Architecture (**89**), Object-Oriented Programming (**89**), Computer Networks (**86**).
- Ranked **1st** in the final cohort (initial cohort of 27 screened down to 10 with a **63% attrition rate**).

Beijing Institute of Technology, Beijing, China 2020.10 - 2024.6
Bachelor of Mathematics and Applied Mathematics

- Gained a solid theoretical background in mathematics, which underpins my quantitative and analytical skills.

PUBLICATIONS

[1] **Junqi Lu**, Bosen Liu, Cuicui Pei, Qingan Qiu*, and Li Yang*. Learning to optimize termination decisions under hybrid uncertainty of system lifetime and task duration. *Computers & Industrial Engineering*, 2025. DOI: 10.1016/j.cie.2025.111208 (**Published, IF=6.5, JCR Q1**)

[2] **Junqi Lu**, Qingan Qiu*. Deep Reinforcement Learning for Condition-based Termination Decisions with Degradation Modeling. (**Working Paper**)

[3] **Junqi Lu**, Xin Li*. A Multi-step Bisimulation Metric Integrating λ-returns and SimSR. (**Working Paper**)

RESEARCH EXPERIENCE

Deep Reinforcement Learning & State Representation 2025.7 - Present
Research Assistant | Advisor: Prof. Xin Li, Deep Reinforcement Learning Lab

- Investigating **Bisimulation Metrics** for state representation learning to address credit assignment and double sampling issues in Bellman-based algorithms.
- Completed theoretical derivations for a multi-step bisimulation distance integrating **λ-returns** and SimSR.
- Conducting **pixel-based experiments** on the **DeepMind Control Suite**. Preliminary results show significant performance gains over baselines in capturing long-term behavioral similarity.
- Targeting submission to **ICML 2026** (International Conference on Machine Learning).

Reliability Engineering Analysis 2023.6 - present
Research Assistant | Advisor: Prof. Qingan Qiu, Beijing Institute of Technology

- Proposed a **Markov Decision Process (MDP)** framework to solve Mission Abort problems for safety-critical systems, balancing task success probability and system safety under hybrid uncertainty.
- **Published a first-author paper in C&IE (JCR Q1)** detailing the discrete optimization method.
- **Ongoing Extension:** Addressing the curse of dimensionality inherent in discrete state spaces by incorporating **Reinforcement Learning**. Currently developing a continuous control framework to optimize maintenance strategies in high-dimensional complex systems. Targeting submission to RESS 2026.

HONORS & AWARDS

Outstanding Student Award, Beijing Institute of Technology Nov 2025

- Comprehensive university-wide honor awarded to the **Top 10%** of students based on exceptional academic achievement and/or outstanding research contributions.

Academic Excellence Scholarship, Beijing Institute of Technology Oct 2025

- Awarded to the **top-ranking student (Rank 1/10)** in the Computer Science Dual Degree program for exceptional academic performance.

Finalist (Top 2%), Interdisciplinary Contest in Modeling (ICM) Feb 2025

- Ranked in the **Top 2%** (Finalist) out of 27,456 teams globally.
- **Open Source & Reproducibility:** Developed a comprehensive, fully reproducible solution repository (GitHub), featuring differential equation modeling and step-by-step tutorials, garnering **40+ stars**.

University "Excellent Thesis" Prize, Beijing Institute of Technology Jun 2024

- Awarded for the undergraduate thesis on safety-critical system termination.

Meritorious Winner (Top 9%), Mathematical Contest in Modeling (MCM) Feb 2023

- Constructed a *Soil-Water Model* and an *Improved Lotka-Volterra Model* to simulate ecosystem dynamics.
- **Huixian Special Grant (Te Li College)**: Institutional award granted by Te Li College, BIT, in recognition of the team's outstanding contribution to international competition achievements.

RELEVANT COURSEWORK

- **Computer Science:** Data Structures and Algorithms, Operating Systems, Computer Architecture, Computer Networks, Object-Oriented Programming, Database Principles.
- **Mathematics:** Real Analysis, Functional Analysis, Abstract Algebra, Probability Theory, Mathematical Statistics, Partial Differential Equations (PDE), General Topology, Numerical Analysis.
- **Specialized Topics:** Reinforcement Learning (Graduate-Level), Machine Learning Fundamentals.

SKILLS

Technical Skills

- **Programming Languages**: **Python** (Expert in scientific computing: *PyTorch, NumPy, Pandas*), **C++** (OOP, Linux system development).
- **ML/DRL Frameworks**: **PyTorch** (Primary for DRL research), TensorFlow/Keras (Familiar).
- **System Project Highlight**: Developed a C++ concurrent BBS & Chat System (GitHub) on Linux, featuring a **single-threaded, event-driven architecture** powered by **epoll**. Implemented custom binary protocol, file transfer with handshake, and modular C/S design.
- **Tools & Academic Ecosystem**: **Git** for version control, **Linux/Bash**, Proficient with **LaTeX** for academic writing, Familiar with **Lean 4** for formal proof verification.
- **DSA Practice & Outreach**: Maintained a Chinese blog with **over 20 technical articles** on Data Structures and Algorithms (including **100+ LeetCode solutions**), accumulating **20K+ views**.

INTERESTS

- **Marathon Running:** Committed long-distance runner with an annual mileage exceeding **1,000 km** for three consecutive years. Half-Marathon Personal Best: **1:41:34**.
- **Music:** Lead guitarist and bassist for university rock bands. Passionate about classic rock arrangement and performance; active participant in campus music festivals.