

Angel (Leyi) Cui

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EDUCATION

Columbia Engineering, Columbia University

M.S.; Major in Computer Science, Software Systems Track

New York, NY

Sep 2024 - Expected Dec 2024

Barnard College, Columbia University

B.A.; Major in Computer Science; Minor in Dance

New York, NY

Sep 2020 - Dec 2023

- GPA: 3.74; Major GPA: 3.88; Dean's List; Graduate with Departmental Honor
- Relevant Courses: Program Synthesis, CS Theory, AI, ML, Engineering SaaS, Cloud Computing, Cryptography, Databases

WORK EXPERIENCES

Barnard Programming Language Lab

Research Assistant

New York, NY

Dec 2023 – Present

- Worked on the project Spiral Analysis; defined an approach of maintaining the software integrity for migrated medical softwares
- Presented an approach of structuring a goal-driven LLM-based multi-agent bot's behavior through formal temporal logic
- Finetuned the LLM pipeline for generating Temporal Stream Logic specification, a temporal logic specification, to make temporal logic specification engineering more accessible; benchmarked 3 specifications

Software Design and Analysis Lab, Carnegie Mellon's REU (REUSE) program

Research Assistant

Pittsburgh, PA

May 2023 – Dec 2023

- Conducted usability study on an open-source EHR system; built a tool that automates the generation of erroneous workflows given an original workflow of interacting with a software, and the testing of the system's behavior according to the input workflow
- Found use cases and execute evaluations for ATLAS, a tool that solves the constrained LTL learning problem through an encoding in a first-order relational logic and reduction to an instance of the maximal satisfiability (MaxSAT) problem

Barnard Programming Language Lab, Summer Research Institute

Research Assistant

New York, NY

May 2022 – Dec 2022

- Wrote Temporal Stream Logic specification in different use cases to understand the barriers of writing TSL
- Designed and implemented user interfaces to make writing TSL more accessible; conducted user studies
- Implemented TSL tools including simplifying synthesized code and modulo theory for TSL

ByteDance Ltd.

Game Producer & Planner

Beijing, China

Oct 2020 – May 2021

- Producer and sole designer for Hui Su Sha Tang, a music game with 545k views, 41k downloads, and a rating of 8.1/10.0

Apple Inc.

Apple Teacher for programming and music

Jiangmen, China

Jun 2021 – Aug 2021

- Taught 50+ kids computer programming and music in rural areas to promote education equality

PUBLICATIONS

Peer-Reviewed

Towards Reactive Synthesis as a Programming Paradigm

Leyi Cui*; Raven Rothkopf*; Mark Santolucito

PLATEAU2024: 14th annual workshop on the intersection of HCI and PL

Towards the Usability of Reactive Synthesis: Building Blocks of Temporal Logic

Raven Rothkopf; Angel Leyi Cui; Hannah Tongxin Zeng; Arya Sinha; Mark Santolucito

PLATEAU2023: 13th annual workshop on the intersection of HCI and PL

Constrained LTL Specification Learning from Examples

Changjian Zhang; Parv Kapoor; Ian Dardik; Leyi Cui; Romulo Meira-Goes; David Garlan; Eunsuk Kang

Under submission to ICSE 2025

Making Temporal Logic Specification Engineering more Accessible with LLMs

William Murphy; Nikolaus Holzer; Nathan Koenig; Leyi Cui; Raven Rothkopf; Feitong Qiao; Mark Santolucito

Under submission to LOPSTR 2024

On the Two-dimensional Resilient Consensus

Leyi Cui

2019 IEEE 7th International Conference on Computer Science and Network Technology (ICCSNT)

Preprints

Fuzzy Mental Model Finite State Machines: A Mental Modeling Formalism for Reasoning about Confusion in Human Technology Interaction

Matthew L. Bolton; Eunsuk Kang; **Leyi Cui**

OpenEMR Usability Evaluations

Leyi Cui; Eunsuk Kang

POSTERS AND PRESENTATIONS

Towards Reactive Synthesis as a Programming Paradigm

Angel (Leyi) Cui, Raven Rothkopf, Mark Santolucito

PLATEAU 2024: 14h annual workshop on the intersection of HCI and PL @ UC Berkeley

Feb 2024

Safe and Reliable Medical Records: Assessing the Robustness of OpenEMR

Angel (Leyi) Cui, Eunsuk Kang

Columbia University Undergraduate Computer and Data Science Research Fair, **Best Overall Prize**

Nov 2023

Carnegie Mellon University REUSE Poster Session

Aug 2023

Advancing the Usability of Temporal Stream Logic

Angel (Leyi) Cui, Raven Rothkopf, Mark Santolucito

Barnard College Summer Research Institute Poster Session

Aug 2022

Virtual Vitality: Augmenting Clinical Decisions via Expert-Informed Transformers

Haowen 'John' Wei *, Ziheng 'Leo' Li *, Kuang Sun, **Angel (Leyi) Cui**, Kaveri Thakoor, Steven Feiner

Center of Excellence in the Neuroscience of Decision-Making at Columbia University Annual Meeting

Nov 2023

SCHOLARSHIPS, PRIZES, AND HONORS

Barnard College, Columbia University, **Computer Science Departmental Honors**

Barnard College, Columbia University, **Dean's List**

2023 Columbia University Undergraduate Computer and Data Science Research Fair, **Best Overall Prize**

2023 Carnegie Mellon University Research Experiences for Undergraduates in Software Engineering Program **Scholarship**

Fall 2023 Beyond Barnard Internship Program **Grant Receiver**

2022 Columbia University DevFest, **Best Design Prize**

2020 Byte Camp Game Design Track, **Winner**

2019 CRC (FRC) Robotics Competition, **National 2nd Place**

2018 MIT Energy Hackathon, **Third Place**

2018 MIT Energy Hackathon MIT Track, **Winner**

TEACHINGS AND MENTORSHIP

Teaching Assistant, Computer Science Theory, Columbia University

Fall 2023

Instructor: Toniann Pitassi, Students: 200

Barnard Peer Mentoring Program, Mentor

2022 - Present

Teaching Assistant, Computer Science Theory, Columbia University

Spring 2023

Instructor: Xi Chen, Students: 400

Teaching Assistant, Computer Science Theory, Columbia University

Fall 2022

Instructor: Tal Malkin, Students: 400

Application Development Initiative, Mentor, Columbia University

Spring 2022

SKILLS

Languages: Java, Python, C++, C, C#, HTML/CSS/JS, SQL, R, LaTeX

Frameworks/Libraries: Flask, Django, React, PostgreSQL, MySQL, MongoDB, TensorFlow, Pandas, NumPy, OpenCV, Heroku, Selenium

Tools: Unity, Linux, Git, Docker, MATLAB, Figma, Adobe Premier, GarageBand

Extracurricular Activities: Screenwriter of comic "The Female Prince Consort" adapted from Huang Mei Opera

Clubs: Columbia Application Development Initiative; Barnard Better, Enhance, and Advance Research Series in Computer Science; Columbia University Ballet Ensemble (CUBE); Barnard & Columbia Chorus