

Qiaochu (Jocelyn) Chen

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Research Mission

To assist a broad spectrum of users by developing **intuitive** and **powerful** programming tools

Specialization Programming Languages, Formal Methods
Other interests Natural Language Processing, Human-Computer Interaction
Current topics Program synthesis, Domain-specific languages, Neurosymbolic Programming

Education

2024 (Expected) **The University of Texas at Austin**,
Ph.D., Computer Science

2018 **University of Wisconsin - Madison**,
B.S., Computer Science, Statistics, Mathematics

Publications

Referred Conference Papers

* signifies research mentees

- NeurIPS23 Xi Ye, **Qiaochu Chen**, Isil Dillig, and Greg Durrett. Satlm: Satisfiability-aided language models using declarative prompting. In *Proceedings of NeurIPS, 2023*
- OOPSLA23 **Qiaochu Chen**, Arko Banerjee*, Çağatay Demiralp, Greg Durrett, and Işıl Dillig. Data extraction via semantic regular expression synthesis. *Proc. ACM Program. Lang.*, 7(OOPSLA2), oct 2023
- PLDI23 Celeste Barnaby*, **Qiaochu Chen**, Roopsha Samanta, and Işıl Dillig. Imageeye: Batch image processing using program synthesis. *Proc. ACM Program. Lang.*, 7(PLDI), jun 2023
- OOPSLA22 **Qiaochu Chen**, Shankara Pailoor, Celeste Barnaby*, Abby Criswell*, Chenglong Wang, Greg Durrett, and Işıl Dillig. Type-directed synthesis of visualizations from natural language queries. *Proc. ACM Program. Lang.*, 6(OOPSLA2), oct 2022
- EMNLP21 Xi Ye, **Qiaochu Chen**, Isil Dillig, and Greg Durrett. Optimal neural program synthesis from multimodal specifications. In *Findings of the Association for Computational Linguistics: EMNLP 2021*, pages 1691–1704, Punta Cana, Dominican Republic, November 2021. Association for Computational Linguistics

- PLDI21 **Qiaochu Chen**, Aaron Lamoreaux*, Xinyu Wang, Greg Durrett, Osbert Bastani, and Isil Dillig. Web question answering with neurosymbolic program synthesis. In *Proceedings of the 42nd ACM SIGPLAN International Conference on Programming Language Design and Implementation*, PLDI 2021, page 328–343, New York, NY, USA, 2021. Association for Computing Machinery
- TACL20 Xi Ye, **Qiaochu Chen**, Xinyu Wang, Isil Dillig, and Greg Durrett. Sketch-driven regular expression generation from natural language and examples. *Transactions of the Association for Computational Linguistics*, 8:679–694, 2020
- ACL20 Xi Ye, **Qiaochu Chen**, Isil Dillig, and Greg Durrett. Benchmarking multimodal regex synthesis with complex structures. In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics*, pages 6081–6094, Online, July 2020. Association for Computational Linguistics
- PLDI20 **Qiaochu Chen**, Xinyu Wang, Xi Ye, Greg Durrett, and Isil Dillig. *Multi-Modal Synthesis of Regular Expressions*, page 487–502. Association for Computing Machinery, New York, NY, USA, 2020

Work in Progress

- TBD Celeste Barnaby*, **Qiaochu Chen**, Chenglong Wang, Işil Dillig. PhotoScout: Synthesis-Powered Multi-Modal Image Search. *In submission*

Research Talks

- 2023 **Data extraction via semantic regular expression synthesis**
OOPSLA, Cascais, Portugal
- 2022 **Type-directed synthesis of visualizations from natural language queries**
OOPSLA, Virtual
- 2022 **Web question answering with neurosymbolic program synthesis**
Languages, Systems, and Data Seminar, University of California Santa Cruz. Zoom
- 2021 **Program synthesis for web question answering and visualization**
RelationalAI. Zoom
- 2021 **Web question answering with neruosymbolic program synthesis**
PLDI, Virtual
- 2020 **Multi-modal synthesis of regular expressions**
PLDI, Virtual

Selected Honors

- 2023 **Rising Stars in EECS, Georgia Tech**
- 2018 - 2022 **Provost’s Graduate Excellence Fellowship, The University of Texas at Austin**
- 2019 **Travel Scholarship for Verification Mentoring Workshop for CAV 2019**
- 2019 **Travel Scholarship for Programming Language Mentoring Workshop for PLDI 2019**

Research Mentees

PhD Students

- 2021 - present **Celeste Barnaby**, advised by Işil Dillig
Co-authored PLDI23, OOPSLA22

B.S. Students

- 2022 - 2023 **Arko Banerjee**, with Işil Dillig
Co-authored OOPSLA23

2021 - 2022 **Abby Criswell**, with Işil Dillig
Honor thesis: *Synthesizing Data Visualizations from Natural Language*

2020 - 2021 **Aaron Lamoreaux**, with Işil Dillig
Co-authored PLDI21

Teaching

Fall 2023 Guest Lecturer, **Special Topics in Programming Languages: Program Synthesis, graduate seminar.**

Instructor: Yuepeng Wang, Simon Fraser University

Lecture on *Multi-modal Synthesis of Regular Expression* (120 minutes, approxi. 20 graduate students in total)

Fall 2023 Guest Lecturer, **Discrete Math (Honor), undergraduate.**

Instructor: Işil Dillig, University of Texas at Austin

Lecture on *Proof Methods, Sets, Graphs and Recurrences* (75 minutes, 2 sections, approxi. 80 undergraduate students in total)

Fall 2023 Teaching Assistant, **Discrete Math (Honor), undergraduate.**

Instructor: Işil Dillig, University of Texas at Austin

Graduate TA for a discrete math course for approxi. 80 undergraduate

Selected Formal Mentorship and Outreach

2022 - present **Coordinator**, SIGPLAN Long-Term Mentoring Program

2023 **Volunteer**, University of Texas at Austin

Take a Girl To Engineering Day and STEM Festival

2022 **Volunteer**, Perez Elementary School

Hour of Code

2022 **Volunteer**, Liberal Arts and Science Academy

Hour of Code

Professional Activities

Departmental and University Service

2023 PhD application reader

2022, 2019 Panelist, PhD visit days

2021 Master application reader

Reviewing

Conferences VMCAI AE (2023, 2024), POPL AE (2024), POPL (2024, external)

Professional Experience

Industry Research

2023 **Nectry**, Intern

2023 **Veridise**, Research Intern

Supervisor: Ben Mariano

2022 - 2023 **Sigma Computing**, Research Intern

Supervisor: Çatāgay Demiralp

Academic Research

2018 - present **The University of Texas at Austin**, Graduate Research Assistant

2015 - 2018 **University of Wisconsin - Madison**, Undergraduate Research Assistant

Advisor: Bilge Mutlu

References

Işil Dillig (advisor)

Professor

Department of Computer Science, The University of Texas at Austin
Austin, TX

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Greg Durrett (co-advisor)

Associate Professor

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Ranjit Jhala

Professor

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Armando Solar-Lezama

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