

Shardul Chiplunkar

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Education

- 2022 – EPFL (École Polytechnique Fédérale de Lausanne), *Lausanne, Switzerland*
PhD student in School of Computer and Communication Sciences
advisor Prof. Martin Odersky, Programming Methods Laboratory (LAMP)
- 2018 – 22 Massachusetts Institute of Technology, *Cambridge, MA, USA*
GPA 5.0/5.0, S.B. in Mathematics with Computer Science
- coursework theory of computation, symbolic systems, information & entropy, algorithms;
computational cognitive science, linguistic semantics & pragmatics, language acquisition;
music technology, play translation, Internet policy, copyright law

Technical experience

- 2021 – 22 Teaching assistant for MIT 6.009 Fundamentals of Programming
- **Helped students 1-on-1 solve and debug** extensive weekly lab assignments covering fundamental concepts like recursion and data structures
 - Helped design and grade lab assignments and quizzes, set course policies, and communicate students' experiences and challenges to the instructor (Adam Hartz, MIT EECS)
- 2021 Engineering & Development intern at The MathWorks, Inc.
- Compiler optimizations for code generation of lower languages (C/C++, HDL, etc.) from MathWorks products, with a foundational impact on customer production code
- 2019 – 20 Programming Languages & Verification lab (MIT CSAIL)
- Developed a **domain-specific language and verified compiler for Internet firewalls** using correct-by-construction software synthesis and proof automation techniques in Coq
 - Presented at Coq for Programming Languages (CoqPL) 2021 ([doi:10.5281/zenodo.4316324](https://doi.org/10.5281/zenodo.4316324))
- 2020 – 21 Computational Cognitive Science lab (MIT BCS)
- Modeling human intelligence and learning as symbolic program inference
- 2020 Intern at Causality In Cognition lab (Stanford Psychology)
- Probabilistic programming languages and physics simulations to model human causality cognition
- 2018 – Mathematics teaching
- TA for combinatorial game theory camp, winter 2020, under Simon Rubinstein-Salzedo
 - Co-organizer and instructor at Monsoon Math Camp 2020, online high school math program
 - Junior counselor at Summer Program in **Applied Rationality and Cognition** (SPARC) 2020
 - Taught six-session courses on “Mathematical Logic” and “Mathematics of Music” at MIT HSSP
- 2014 – 18 Contributor to Apertium, open source machine translation platform
- Web development for machine translation services, and presented a technical report at AMTA LoResMT workshop 2018 (aclweb.org/anthology/W18-2207)
 - Mentor for projects in Google Code-In 2018 and 2019 (open source development contest for high-schoolers) and Google Summer of Code 2018 (open source internships for undergraduates)

Honors

- 2022 NSF GRFP (Graduate Research Fellowship Program) awardee
- 2022 MIT EECS Undergraduate Teaching Award
- 2021 Profile featured on MIT News ([link](#))
- 2017 Honorable Mention, International Linguistics Olympiad (IOL)

Publications

- 2021 **Chiplunkar**, Pit-Claudel, Chlipala. “Automated Synthesis of Verified Firewalls”, The Seventh International Workshop on Coq for Programming Languages (CoqPL 2021), [doi:10.5281/zenodo.4316324](https://doi.org/10.5281/zenodo.4316324)
- 2021 (*non-author contributions*) Gerstenberg and Stephan. “A counterfactual simulation model of causation by omission”, *Cognition*, 2021, [doi:10.1016/j.cognition.2021.104842](https://doi.org/10.1016/j.cognition.2021.104842)
- 2018 Cherivirala, **Chiplunkar**, Washington, Unhammer. “Apertium’s Web Toolchain for Low-Resource Language Technology”, Workshop on Technology for Machine Translation of Low Resource Languages 2018, aclweb.org/anthology/W18-2207

Service & leadership

- 2020 – 22 MIT Committee on the Undergraduate Program
Governance committee overseeing **undergraduate academic structures, policies, and programs**, and encouraging experimental innovation
- 2022 MIT Committee on Student Life
Governance committee overseeing the learning and living environment at MIT, including **student housing, food security and dining services, mental health and student support services, diversity & inclusion initiatives**, and support for student organizations
- 2020 Chair, MIT Educational Studies Program (ESP)
Mentored team members, interfaced with MIT administration and the public, and managed shift to online operations (due to COVID-19) for student organization that runs **educational events serving over 5,000 students annually** from local high and middle schools
- 2018 – 20 Panini (Indian National) Linguistics Olympiad
Chair of Problem Committee to **design & test-solve national linguistics contests**, 2019 and 2020, and **trainer for Team India** for the International Linguistics Olympiad, 2018 and 2019
- 2022 MIT MacVicar Faculty Fellows Advisory Committee
Nomination committee for the Margaret MacVicar Faculty Fellows Program, recognizing exceptional undergraduate teaching
- 2021 – 22 MIT Campus Activities Complex Advisory Board
Advisory board for management of campus performance & event spaces, facilities, and equipment
- 2021 – 22 MIT Living Group Council
Leadership council for Independent Living Groups (ILGs) at MIT, representing pika