

# Shardul Chiplunkar

## Education

- 2018–2022 Massachusetts Institute of Technology, *Cambridge, MA*  
GPA 4.7/5.0, candidate for S.B. in **Mathematics with Computer Science**
- 2016–2018 American High School, *Fremont, CA* — GPA 4.0/4.0
- 2012–2016 Vidya Valley School, *Pune, India* — ICSE grade 10: 95.6%

## Experience

- 2019– Research in formal verification
- Building a verified Internet firewall with correct-by-construction code synthesis techniques in Coq
  - Developing libraries and automated proof tools in the Fiat framework
  - Advised by Dr. Adam Chlipala, MIT CSAIL Programming Languages & Verification
- 2013–2018 Contributor to Apertium, open source machine translation platform
- Co-authored and presented **paper on web infrastructure** at Association for Machine Translation in the Americas (AMTA) 2018 conference
  - Worked on frontend and backend for **machine translation** services, including writing a text-to-speech frontend from scratch and working on a Marathi-Hindi translation pipeline
  - Part of team that proposed, conducted, and documented organization-wide source code migration to GitHub
  - Mentor for projects in Google Code-In 2018 and 2019 (high-school software development contest) and Google Summer of Code 2018 (open source internships for undergraduates)
- 2016– Panini (Indian National) Linguistics Olympiad
- Co-chair of Problem Committee to **design national linguistics contests**, 2019 and 2020; member in 2018
  - Leading efforts to increase transparency within the Committee and improve problem quality and collaboration
  - Trainer for Team India for **International Linguistics Olympiad** 2018 and 2019
- 2018– MIT Educational Studies Program
- Helping organize **educational events** such as Splash for thousands of local high-school and middle-school students, drawing teachers and volunteers from the MIT community
  - Responsibilities included directing annual club recruitment event, organizing and running a help desk serving over 1,000 middle-school students, and serving as club historian
  - Working with **large-scale administrative and logistical challenges** to smoothly interface with students, teachers, parents, and MIT institutional factors
- (varied) Math & science programs
- Summer Program in Applied **Rationality and Cognition** 2018, 2019: exposure to topics in statistics, cognitive science, human rationality, theoretical computer science, mindfulness and introspection
  - MathILy-Er 2017: intensive 5-week **discrete math** summer program focusing on combinatorial game theory
  - 2014–2016: Bhaskaracharya Pratishthana math circle: discovery-based exploration of Olympiad topics
- 2006–2016 10 years of Hindustani classical vocal training
- Also 4 years of *tabla* training, 7 years of choir & a cappella, basic harmonium and guitar

## Initiatives

- 2018– Co-founder of Linguistics Circle in Pune, India
- Organized a linguistics lecture series for high-school students
  - Led problem-solving practice and discussion sessions
  - Building off experience as founding president of high school linguistics club
- 2019– Community-building at MIT Educational Studies Program
- Leading experiments to promote community among students and teachers at ESP events, and to make educational content available to the online community

## 2015 – 2016 VoteCounter, an electronic voting application

- Developed frontend and backend from scratch for VoteCounter, a customizable online voting application for school prefect elections
- Eliminated hours-long manual vote counting; dramatically sped up school's election day process

## (varied) Mathematics and computer science tutoring

- Tutored AP Calculus BC, AP Computer Science A (introductory Python and Java) to high school peers; led practice sessions in Olympiad mathematics topics at math club; co-taught logic course at MIT HSSP

## Awards & recognition

- Honorable Mention, Team India at International Linguistics Olympiad 2017; participant in IOL 2016
- Gold Medal and two Best Solution Awards at Panini Linguistics Olympiad 2016 (Indian national training camp and contest); Silver Medal and two Best Solution Awards at PLO 2017
- Grand Prize Winner in Google Code-In 2017 (high school open source software development contest), for work with Apertium (34 Winners from over 1200 contestants)
- Bronze Medal in USA Mathematical Talent Search 2017
- Qualified for AIME 2018 (American Invitational Mathematics Examination)
- Qualified for Indian National Mathematical Olympiad 2016, ranked top 30 in state
- Qualified for Indian National Informatics Olympiad 2016
- Special Mention for mathematical modeling presentation at AIMER student conference 2016

## Skills

**Tools** Python, Java, C, LISP, JS & web development; Linux & network administration; microcontrollers, digital electronics, Raspberry Pi; SageMath, Coq,  $\LaTeX$ , introductory WebPPL, MATLAB

**Coursework** computational cognitive science, information and entropy, theory of computation, human cognition, elliptic curves, music technology

**Other** speaks Marathi (native), Hindi, French; introductory exposure to cattle-herding