# Shaurya Gomber

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## Education

**University of Illinois at Urbana-Champaign** — Illinois, USA
*Masters of Science, Computer Science* — Aug 2022 - May 2024

***Focus*:** Programming Languages & Formal Methods

***Key Courses*:** Trustworthy AI Systems, Program Verification

***Assistantships*:** Graduate Teaching Assistant for CS225 Data Structures

**Indian Institute of Technology, Guwahati** — Assam, India
*B. Tech, Computer Science and Engineering; GPA: 9.66/10, Class Rank: 3/88* — July 2016 - June 2020

## Industry Experience

**Software Engineer II** — June 2020 – June 2022
*D.E. Shaw & Co.* — Hyderabad, India

- **Low latency distributed system:** Worked on the firm's proprietary electronic trading system: a distributed application engineered to efficiently handle large amounts of trading data (in TBs) flowing throughout the day.
- **Full Stack Development:** Worked on the full stack development of enhancements to the trading system. This included features to optimize the traders' workflows like giving them the flexibility to define new data in the UI from existing data by specifying any arbitrary computations. (Languages used: Java, Python, React)
- **Code reviews and design discussions:** Did code reviews of some major projects and participated in design discussions for various components of the trading system.

**Software Engineering Intern** — May 2019 - July 2019
*D.E. Shaw & Co.* — Hyderabad, India

- Implemented a *type-safe low-latency functional programming API* in Java to read and write trading data on the on-premise database. Used the API to get a 60x run-time improvement in production critical scripts and was offered the *Pre-Placement Offer (PPO)* for this work.

## Selected Projects

**Compiler Construction** — GitHub

- Developed a *compiler for a C-like language* from scratch by implementing all stages of compilation: lexical analysis, parsing, intermediate code generation and target MIPS code generation using *Flex, Bison and SPIM simulator*.
- It supported: Function calls, expressions (relational, arithmetic and logical), if-else, switch, for and while loops.

**VReadA: Visual Readability Analyzer** (Bachelors Thesis) — GitHub

- Generates a visual heatmap analysis of the readability of a text sample by analyzing the *linguistic complexity, predictability, perplexity and coherence* among sections of the sample.
- Developed novel methods to measure coherence using the similarity of sentence vectors of consecutive sentences.
- Used state-of-the-art Language Models, Word Vectors and NLP tools to get accurate results.

**Efficient SAT Solver** — GitHub

- Implemented an efficient SAT Solver using the *CDCL (Conflict Driven Clause Learning)* algorithm.
- Used state-of-the-art optimizations like 2-watched literals, Decision Heuristics (VSIDS, DLIS) and Restart Heuristics (Geometric, Luby) to make the solver efficient.
- Came up with heuristics based on intelligent data structures like Priority Queue and innovative restart strategies to improve the performance of the solver further.

## Technical Skills

**Languages**: Java, Python, C/C++, Javascript (React), Haskell, Prolog, Maude
**Tools**: Git, MySQL, SpaCy, Django, Grafana, Flex & Bison, SPIM Simulator, NuSMV, Z3
**Miscellaneous**: Shell Scripting, Socket Programming, NumPy, Matplotlib, Web Scraping

## Achievements

- **Institute Merit Scholarship IITG 2019:** $2800 for scoring the highest grades in the academic year 2018-19
- **Microsoft Code.Fun.Do 2019:** Among *top 10* national finalists (300+ teams, Topic: Blockchain Voting System)
- **ACM ICPC 2018:** Represented IIT Guwahati in India regionals held at Amritapuri, Kerela.
- **IIT JEE Advanced 2016:** Secured All India Rank *902 (top 0.06 %) out of 1.5 million* candidates.