

Saurabh Joshi, PhD

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Professional Experience

• Director of R&D – Oct 2024–Present

Supra, Hyderabad, India (Remote).

- Technical Product Owner and Architect for DORA, an oracle solution from Supra
- Technical Product Owner and Architect for Supra Native Automation for Move and EVM
- Leading smart contract development efforts for AutoFi, DORA, Automation, Indices
- Leading efforts on Supra specific adaptations for Move language
- Member of multisig authority for Supra Foundation
- Design inputs for SupraLiquid/Microchain, Supra EVM
- Leading internal audit efforts for smart contracts at Supra including HyperNova, DORA, AutoFi

• Principal Researcher – May 2022–Sep 2024

Supra, Hyderabad, India (Remote).

- Key contributor in planning technological road-map for Supra
- Application layer design, implementation and adaptation for Supra Framework in Move programming language
- Leading efforts on native blockchain automation service
- Leading and coordinating effort on novel design for blockchain oracle from conceptualization to production
- Leading a team of smart contract developers for providing oracle and VRF (Verifiable Random Function) services to various networks based on EVM, Move VM, Radix, CosmWasm
- Initiated efforts on formal specifications and verification of Move contracts
- Published a research paper as well as a US patent based on our novel oracle design
- Probabilistic analysis of oracle and moonshot protocol
- Coordinating, supervising and helping the engineering team on various aspects pertaining to oracle services, SMR, and smart contract development
- Helping in assessment and hiring

• Staff Engineer, Product Security – Oct 2021–May 2022

Qualcomm, Hyderabad, India.

- Led and coordinated Security Validation team of 12 engineers in developing proof-of-concept exploits for reported vulnerabilities on mobile software stack
- Led and coordinated team of 3 engineers for countermeasure testing for mobile chipsets
- Developed university relations within India for Qualcomm security group
- People management of engineering team

• Assistant Professor Grade I – May 2016–Sep 2021

Department of CSE, IIT Hyderabad, India. Tools developed: [GPURepair](#), [Open-WBO-Inc](#), [Pinaka](#), [Shesha](#), [GoProver](#), [LLVM2GOTO](#)

• Assistant Professor (Grade I) – Sep 2015–May 2016

Department of CSE, IIT Guwahati, India.

- **Post Doctoral Research Fellow — Aug 2012–Aug 2015**
Department of Computer Science, University of Oxford, UK. Tools developed: [cbmc-repair](#), [2LS](#), [Open-WBO](#), [Walcyrie](#)[^][Approved artefact for PPOPP 2016], VerifOx
- **Research Intern — May 2010–Sep 2010, Feb 2011–Apr 2011**
Rigorous Software Engineering group, Microsoft Research, India. Tools developed: Cbugs, AtomicInf
- **Project Trainee — Aug 2006–Jul 2007**
Software Engineering group, IBM India Research Lab, New Delhi, India. Tools improved: SAFE

Patents

- **“Finding Bugs with Low False Alarms and Under-specified Harness”** *Saurabh Joshi*, Shuvendu Lahiri and Akash Lal US patent number: 8793664. Patent Granted.
- **“Distributed Oracle Agreement System and Method (DORA)”**, *Saurabh Joshi*, Aniket Kate, Joshua Tobkin and David Yang, US Patent App. No: PCT/US/36923

Research Articles

- Several peer-reviewed research articles in top-tier conferences and journals in the areas of program analysis, formal verification, constraint solving and optimization, and blockchain. For details, please refer to the Publications section on my homepage: [\[Publications\]](#)

Talks

1. “Invited talk on **Web3 and Program Analysis** at IICT (CompilerTech) 2024.” [\[video\]](#)
2. Invited talk on **Distributed Oracle Agreement with Simple Majority** at IIT Hyderabad August 2023
3. “Talk on **Supra Automation Network** as part of The Tech Behind Supra webinar series.” [\[video\]](#)
4. “Invited talk on **DORA** at Ethereum Engineering Group meetup.” [\[video\]](#)
5. “**Code Contract: What, Why and How?**” at CppIndiaCon 2021.” [\[video\]](#), [\[slides\]](#), [\[code\]](#)
6. “**GPURepair: Automated Repair of GPU Kernels**”, at Qualcomm (Feb 2021).
7. “**Approximation Strategies for Incomplete MaxSAT**”, at IIT Delhi (June 2018), CP, Lille, France (August 2018), at the fourth Indian SAT+SMT School at IIT Bombay (December 2019).
8. “**Generalized Totalizer Encoding for Pseudo-Boolean Constraints**”, at Second Indian SAT+SMT School, Mysore Park, 2017
9. “**How to establish research collaboration with researchers in your domain (India/Outside)?**”, at Research Workshop organized by YP affinity group, IEEE Hyderabad section, IIIT Hyderabad, 2017.
10. “**Property-driven Fence Insertion using Reorder Bounded Model Checking**”, at IIIT Vadodara (Sep 2015), IIT Delhi (Nov 2015), IIT Madras (May 2015), IIT Kharagpur (May 2015), IIT Hyderabad (May 2015), IIIT Delhi (May 2015), IIT Kanpur (May 2015), FM, Oslo, Norway (June 2015).
11. “**Little Pain Big Gain: Role of tricks in constraint solving**”, at IIT Delhi (Nov 2015).
12. “**Interleaved Bugs and Under-specified Harness**”, Mysore Park Workshop on The Future of Debugging, Mysore, 2012.
13. “**What is this FOSS (Free and Open Source Software) all about?**”, A Linux and FOSS awareness talk at Krishna Institute of Technology, Kanpur, April 2010.

Skills

Technical Skills

- **Programming Languages:** Move C++, C, Python, Rust, Solidity, Java, C#
- **Verification Framework:** CPROVER/CBMC, Boogie
- **Compilation Framework:** LLVM
- **Scripting Languages:** bash
- **Build System:** (M)ake, CMake, Cargo
- **Cloud:** Google Cloud Compute Engines
- **Documentation:** Markdown, LaTeX, Typst
- **Version Control:** git, svn
- **Development Tools:** GitHub, Eclipse, Vim, VSCode, GitHub Actions, GDB
- **Linux System Administration**
- **AI tools:** Copilot, Gemini for planning, design, development and testing

Soft Skills

- Excellent communication skills, both written and verbal
- Strong leadership and team management skills
- Ability to work effectively in a remote and distributed team environment
- Strong problem-solving and analytical skills
- Ability to mentor and guide junior team members
- Experience in collaborating with cross-functional teams and stakeholders
- Ability to adapt to new technologies and tools quickly

Education

- **Doctor of Philosophy**, Computer Science — Jul 2007–Feb 2013 IIT Kanpur.
 - Thesis submitted in July 2012
- **Master of Technology** (with Research Assistantship), Computer Science — July 2003–July 2006 IIT Bombay.
- **Bachelor of Engineering**, Information Technology — Sep 1999–Jul 2003 GCET, Sardar Patel University.