NISARG PATEL

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QUALIFICATION SUMMARY

- Extensive work on concurrency, distributed systems and program synthesis.
- Multiple collaborations in industry and academia resulting in publications at top-tier conferences.
- Expertise with wide viariety of programming languages and program verification tools.

WORK EXPERIENCE

NYU Analysis of Computer Systems Group, New York *Sept 2018 - Present*
Graduate Researcher, Advisor: Prof. Thomas Wies

- Introduced *novel* techniques to formally verify concurrent data structures that were out of reach from existing work. The techniques were formalized using a theorem prover for 100% guarantee.
- *First work* to formally prove correct widely used key-value store implementations such as B-trees, Hashtables, LSM trees, lock-free linked-lists and skiplists.
- Ongoing collaboration to *automate* above techniques, shifting significant amount of proof burden from humans to computers.
- Resulting in multiple publications at top conferences and a book with publishers *Morgan & Claypool*.
  ◇ Verifying Concurrent Multicopy Search Structures, *OOPSLA2021*
  ◇ Automated Verification of Concurrent Search Structure Templates, *Morgan & Claypool, 2021*
  ◇ Verifying Concurrent Search Structure Templates, *PLDI2020*

Nokia Bell Labs, New Jersey *Summer 2020, 2021*
Summer Research Intern, Mentor: Kedar Namjoshi

- Implemented procedures to *automatically generate* a central robot co-ordinator that issues commands to multiple robots according to the requirement.
- *Massive improvement* on previous implementation by mathematically enforcing co-ordinator to not issue unnecessary commands.
- Technical work resulted in a publication, gaining interest from 3 other teams to *replicate* our method.
  ◇ Synthesis of Compact Strategies for Coordination Program, *TACAS2022*

EDUCATION

New York University, New York, USA *Sept 2018 - Present*
Ph.D. in Computer Science CGPA: 3.914/4

Chennai Mathematical Institute, Chennai, India *Aug 2013 - June 2018*
M.Sc. in Computer Science CGPA: 9.62/10
B.Sc. in Mathematics and Computer Science CGPA: 8.64/10

SKILLS

- Programming Languages : Python, Java, OCaml, Haskell.
- Program Verification Tools/Theorem Provers: Coq, Iris, GRASShopper, Viper, Dafny, Lean.
- Automata/Synthesis Tools: Spot, Owl, Strix, NuSMV.
- BDD Libraries, SAT/SMT/QBF-solvers.