

Nikhil Kumar Singh

CONTACT INFORMATION	D-215 Hall-8 IIT Kanpur	<i>Contact:</i> ksnikhil@iitk.ac.in, +91-8447077602 <i>GitHub:</i> https://github.com/ciniks117
RESEARCH INTERESTS	Controller Synthesis, Formal Verification, Computer-Aided Design, Cyber Physical Systems, Machine Learning.	
EDUCATION	Indian Institute of Technology, Kanpur, PhD, Computer Science and Engineering, Jan 2020 - Present (9.50/10) Thesis : Specification Guided Automated Controller Synthesis for CPSs. Advisor: Dr. Indranil Saha Indian Institute of Technology, Kanpur, MS, Computer Science and Engineering, Dec 2019 (9.0/10) Thesis : Specification guided Automated Debugging of CPS Models. Advisor: Dr. Indranil Saha National Institute of Technology, Jamshedpur, B.Tech(Hons), Computer Science and Engineering, May 2014 (8.70/10) Project: Intelligent Web Search Engine. Advisor: Dr. Sanjay Kumar	
TECHNICAL ABILITIES	<ul style="list-style-type: none">• Languages: C, Python, C++, Scala, PHP, MySQL.• Machine Learning Frameworks: Scikit-learn, OpenCV, Keras, Tensorflow, gym.• Tools/Fwk : MATLAB, Simulink/Stateflow, SpaceX, BREACH, S-TALIRO, dReach.	
PUBLICATIONS	<ul style="list-style-type: none">• Nikhil Kumar Singh, Indranil Saha. “<i>Specification Guided Synthesis of Feedback Controllers.</i>” ACM SIGBED International Conference on Embedded Software (EMSOFT 2021), ACM/IEEE, virtual conference, October 08-15, 2021. To be Published in ACM Transactions on Embedded Computing Systems (2021) Code at https://github.com/ciniks117/SCoSyn• Nikhil Kumar Singh, Indranil Saha. “<i>Specification Guided Automated Debugging of CPS Models.</i>” International Conference on Embedded Software (EMSOFT2020), ACM/IEEE, virtual conference, September 20-25, 2020. Published in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (2020) https://ieeexplore.ieee.org/document/9211574/. Code at https://github.com/ciniks117/BLARS	
PROJECTS	Geo-Spatial Analysis of Twitter Data. Prof. Arnab Bhattacharya <i>As course project for Data mining course (CS685A)</i> Aug’20 - Dec’20 Implementation of Star-based Abstractions for Outside-the-Box framework. Prof. Subhajit Roy <i>As course project for Program Analysis, Verification and Testing (CS639A)</i> Aug’20 - Dec’20	
MENTORED PROJECTS	Reinforcement Learning based Falsification Sudhanshu Mishra, Niskarsh Kumar <i>As course project for Autonomous Cyber-Physical Systems (CS659A)</i> Jan’21 - May’21 Adaptive Cruise Control Verification Using NNV toolbox Areeb Ahmad, Deepanker Mishra, Himanshu Singh <i>As course project for Autonomous Cyber-Physical Systems (CS659A)</i> Jan’21 - May’21	

Controller Synthesis for LTI systems

Raju Roy, Shashank

As course project for Autonomous Cyber-Physical Systems (CS659A)

Jan'21 - May'21

WORK EXPERIENCE **Indian Institute of Technology, Kanpur** Teaching Assistant

Autonomous Cyber-Physical Systems (CS659A)

Jan'21 - Present

Indian Institute of Technology, Kanpur Teaching Assistant

Embedded and Cyber-Physical Systems (CS637A)

Sept'20 - Dec'20

Indian Institute of Technology, Kanpur Teaching Assistant

Formal Methods for Robotics and Automation (CS638A)

Jan'20 - Apr'20

FMSAFE Project, IIT Kanpur Senior Student Research Associate

Sponsor: MHRD IMPRINT

Jan'18 - Dec'19

- Developed an Automated Tool **BLARS** for Debugging CPS Models.

OptumSoft, Bangalore Member Of Technical Staff

June'14 - Dec'15

- Software Development in the domain of Distributed Systems. This involved a high-level TACC Compiler Framework.

- Projects related to development and maintenance of Dashboard Software.

- Working with the build servers.

HPES-IIIT Allahabad, Intern

May'13 - June'13

- Worked on Digital Library using PHP and MySQL.

AWARDS AND CERTIFICATES

- Selected for **Prime Minister's Research Fellowship** (Dec-2020).
- Nominated by the Department of CSE, IIT Kanpur for *Cadence Gold Medal* and *SIIC Student Innovation Award* for MS thesis.
- Won **first** prize in Data structure & algorithm based event *CODATHON* in OJASS'13.
- Won **third** prize in Coding based event *CODEMANIA* in Ojass' 13.
- Won **second** prize in the event *CODESTORM* conducted by the Computer Society of India at NIT-Jamshedpur held in March-2012.
- Won **first** prize in the event *LET US C* conducted by the Computer Society of India at NIT-Jamshedpur held in April-2011.
- Attended a workshop on CCNA by Ducat in 2012.
- Attended a workshop on Ethical Hacking by Kyrion Digital Electronics in 2011.

ACTIVITIES

Coordinator CODATHON @ OJASS'14

- Organised the flagship Data structure and Algorithms based event in OJASS - the technical fest of NIT Jamshedpur. More than 200 candidates from all over India participated in this event.