Nihesh Rathod

Curriculum Vitae

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Education

July, 2015 onwards	**Doctor of Philosophy in Communications and Networking**, *Department of Electrical Communication Engineering, Indian Institute of Science, Bangalore.*
August, 2013 – June, 2015	**Master of Engineering in Telecommunications Engineering**, *Department of Electrical Communication Engineering, Indian Institute of Science, Bangalore.*
July, 2008 – May, 2012	**Bachelor of Engineering in Electronics and Communications Engineering**, *Department of Electronics and Communication Engineering, Dharmsinh Desai University, Nadiad.*

Work Experience

November, 2019 – March, 2020	**Data Science Intern (Part Time)**, *Netradyne Technology India Pvt Ltd., Whitefield, Bangalore.* – GeoSpatio-Temporal analysis for finding hidden patterns in driving behaviour. – Database management for archiving, handling, and exchange of large data sets.
June, 2018 – August, 2018	**Research Intern**, *Cisco Systems (India) Pvt. Ltd, Bangalore.* – Next generation Wi-Fi specifications (802.11ax and 802.11az). – Neighbour awareness networking (NAN) and in-band full duplex medium access control (MAC) algorithms.
August, 2017 – December, 2017 & August, 2018 – December, 2018	**Teaching Assistant**, *E0-259 Data Analytics, Indian Institute of Science, Bangalore.* – Principles of hand-on Data Analytics through several case-studies. – Data sets from diverse topics such as astronomy, sports, genomics, neuroscience, surveillance camera and social network. – Statistical tools and modeling techniques for analysing data.
August, 2018 – December, 2018	**Teaching Assistant**, *E0-800 Machine Learning and Data Analytics, Indian Institute of Science, Bangalore.* – Basic principles of machine learning and data analytics.
December, 2011 – April, 2012	**Graduate Engineer Trainee**, *Tata Teleservices Limited, Ahmedabad.* – Operation and maintenance of mobile base station and optical fibre backbone infrastructure which provides connectivity to base stations.

Publications: Core Research

IEEE Access 2020 Volume 8	**Coverage Estimation in Outdoor Heterogeneous Propagation Environments**, Nihesh Rathod, Renu Subramanian, Rajesh Sundaresan ⧉
WMNC 2019 Paris, France	**Relay Placement Algorithms for Communication in a Heterogeneous Propagation Environment**, Nihesh Rathod and Rajesh Sundaresan ⧉

Globecom 2018 Abu Dhabi	**Data-driven and GIS-based Coverage Estimation in a Heterogeneous Propagation Environment**, Nihesh Rathod, Renu Subramanian, Rajesh Sundaresan ↗
ISC2 2015 Guadalajara	**Towards an IoT based Water Management System for a Campus**, Prachet Verma, Akshay Kumar, Nihesh Rathod, Pratik Jain, Mallikarjun Sunkenapally, Renu Subramanian, Bharadwaj Amrutur ,M.S. Mohan Kumar, Rajesh Sundaresan ↗
WiOpt 2015 IIT Bombay	**Performance analysis of wireless devices for a campus-wide IoT network**, Nihesh Rathod, Pratik Jain, Renu Subramanian, Siddesh Yawalkar, Mallikarjun Sunkenapally, Bharadwaj Amrutur and Rajesh Sundaresan ↗

Publications: Side Projects

Journal of IISc October 2020	**City-Scale Agent-Based Simulators for the Study of Non-pharmaceutical Interventions in the Context of the COVID-19 Epidemic**, **Issue 100, Volume 4,** Shubhada Agrawal, Siddharth Bhandari, Anirban Bhattacharjee, Anand Deo, Narendra M. Dixit, Prahladh Harsha, Sandeep Juneja, Poonam Kesarwani, Aditya Krishna Swamy, Preetam Patil, Nihesh Rathod, Ramprasad Saptharishi, Sharad Shriram, Piyush Srivastava, Rajesh Sundaresan, Nidhin Koshy Vaidhiyan and Sarath Yasodharan ↗
arXiv Preprint June 2020	**COVID-19 Epidemic Study II: Phased Emergence From the Lockdown in Mumbai**, Prahladh Harsha, Sandeep Juneja, Preetam Patil, Nihesh Rathod, Ramprasad Saptharishi, A. Y. Sarath, Sharad Sriram, Piyush Srivastava, Rajesh Sundaresan, Nidhin Koshy Vaidhiyan ↗
arXiv Preprint December 2020	**COVID-19: Optimal Design of Serosurveys for Disease Burden Estimation**, Siva Athreya, Giridhara R. Babu, Aniruddha Iyer, Mohammed Minhaas, Nihesh Rathod, Sharad Shriram, Rajesh Sundaresan, Nidhin Koshy Vaidhiyan and SarathYasodharan ↗
arXiv Preprint December 2020	**Stochastic Action Prediction for Imitation Learning**, Sagar Gubbi Venkatesh, Nihesh Rathod, Shishir Kolathaya and Bharadwaj Amrutur ↗

Technical Reports

CyPhyss 2017 IISc Bangalore	**Poster – An ACO-based RelayPlacement Tool for Communication in a Heterogeneous Region**, Nihesh Rathod, Renu Subramanian, Rajesh Sundaresan ↗
COMSNETS 2017 Bangalore	**Invited talk – A GIS- and Measurement-aided Framework for Placement of Relays in a Heterogeneous Propagation Environment** Nihesh Rathod, Renu Subramanian, Rajesh Sundaresan (Presenter)

Projects

February, 2021 – June, 2021	**Strategies to Mitigate COVID-19 Resurgence Assuming Immunity Waning:** Spatial heterogeneities exist in seroprevalence and active infections across India. Using a spatially explicit age-stratified model of Karnataka at the district level, we study three spatial vaccination allocation strategies under different vaccination capacities and a variety of non-pharmaceutical intervention (NPI) scenarios. The models are initialised using on-the-ground datasets that capture reported cases, seroprevalence estimates, seroreversion and vaccine rollout plans. The three vaccination strategies we consider are allocation in proportion to the district populations, allocation in inverse proportion to the seroprevalence estimates,and allocation in proportion to the case-incidence rates during a reference period.
July, 2020 – December, 2020	**Swabs to Labs:** A framework designed to aid officials distribute the swab samples to testing labs efficiently to speed up the report generation time while meeting the lab test capacities, minimising the distribution/travel time of samples etc.

March, 2020 – July, 2020	**City-Scale Agent-Based Simulators for the Study of Non-Pharmaceutical Interventions in the Context of the COVID-19 Epidemic:** An agent-based simulator to study the impact of various non- pharmaceutical interventions in the context of the ongoing COVID-19 pandemic. Some of the key features of the simulator include age-stratified interaction that captures heterogeneity in interaction among people in a given interaction space, the ability to implement various interventions such as soft ward containment, phased opening of workplaces and community spaces, a broad class of contact tracing based testing and case isolation protocols, etc.
May, 2020 – June, 2020	**COVID-19 Epidemic: A Workplace Readiness Indicator:** The COVID-19 Readiness Indicator is an online assessment tool that enables organisations to understand their current level of preparedness and key risk areas. It also helps in planning and in establishing pandemic-specific policies, procedures, and necessary management practices.
November, 2019 – March, 2020	**Study of Driving Patterns Among Public Transport Bus Drivers:** A joint project between BMTC, Netradyne and CiSTUP, IISc to understand the driving patterns of BMTC drivers and scored them for their safe driving behaviour. The project also aided the assessment of the Bus Priority Lane implemented on the 30 km stretch of NH 44, between Silk Board Junction and Indiranagar Bus Depot.
May, 2016 – December, 2016	**Bheemboy – A course registration website developed for IISc:** Coursereg is a webapp for managing course registrations at academic institutions. Students can register for courses on the Coursereg website. The registrations can be reviewed by the student's adviser, the relevant course instructor, and department admins. After the registration is complete, students can opt to change the registration type (Credit, Audit, etc.) or drop the course within the specified date. On completion of the course, instructors can assign grades.

Achievements

July, 2015 – June, 2020	**Cisco Research Scholar**, Department of Electrical Communication Engineering, Indian Institute of Science, Bangalore
First Prize December 2019	**PMPML Bus Estimated Time of Arrival Citizen App**, Pune Urban Data Exchange (PUDX) Datathon. Team Uncharted - Nihesh Rathod (Presenter) and Sagar GV.

Illustrations

Journal of IISc April, 2020	**Cover Artwork**, *Special Issue on 5G and Beyond, J-IISc, Volume 100, Issue 2.* – The idea behind this art work is to highlight the applications that 5G will enable, i.e. V2V communication, communication on high speed railway, smart crop monitoring, connected grid etc. 🔗
NCC 2019 February, 2019	**Banner Designs**, *National Conference on Communications, Silver Jubilee Edition, IISc, Bangalore.* – A wave design and NCC 2019 written in the Morse code on sky blue canvas to showcase the advancements in the field of Wireless Networking. 🔗
ECE 2019 February, 2019	**Banner Design**, *Department of Electrical Communication Engineering, IISc, Bangalore.* – A hexagon design borrowed from cellular networks, different streams of research areas with department name written in optical telegraph alphabets. 🔗

Technical Skills

Languages	Python, R, JavaScript
Softwares	Kepler.gl, Matlab, Quantum GIS (Geographical Information Systems), Affinity Designer

Personal Details

Languages	English, Hindi, Gujarati
Hobbies	Writing Poems, Cycling, Reading, Gaming, Music, Cinema

References

IISc Bangalore	**Dr. Rajesh Sundaresan** ↗ Professor, Department of Electrical Communication Engineering.
IISc Bangalore	**Dr. Amrutur Bharadwaj** ↗ Professor, Department of Electrical Communication Engineering.