

# Amey Noolkar



[amey.noolkar@tifr.res.in](mailto:amey.noolkar@tifr.res.in)  
[amey.noolkar@somaiya.edu](mailto:amey.noolkar@somaiya.edu)



(+91) 83 69 424 365



[Amey Noolkar](#)



[coder-amey](#)



[Amey Noolkar](#)



7,  
Onkar Apartment,  
Dena Vijay Colony,  
Sambhaji Chowk,  
Trimbak Road,  
Nashik,  
Maharashtra,  
India – 422005.



## Research Interests

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Neural Networks & Deep Learning  
Natural Language Processing

Cognitive Computing & Image/Speech Recognition  
Applications of NLP on Indian Languages

## Professional Experience

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**Research Fellow** (December, 2020 – Present)  
**School of Technology & Computer Science**  
**Tata Institute of Fundamental Research, Mumbai.**

**Teaching Assistant** (August, 2021 – Present)  
**CSS.212.0: Machine Learning**  
**School of Technology & Computer Science**  
**Tata Institute of Fundamental Research, Mumbai.**

**System Engineer** (July, 2019 – November, 2020) [On a sabbatical for research]  
**Tata Consultancy Services, Bengaluru.**  
Worked as a **Data Scientist** on the Enterprise Analytics Platform for Deutsche Bank.

## Education

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**Bachelor of Engineering (2019)** CGPA: **7.54** (August, 2015 – June, 2019)  
Department of **Computer Engineering**,  
K. J. Somaiya Institute of Engineering & Information Technology,  
**University of Mumbai.**

## Projects, Internships & Work Experience

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**Research Fellowship at TIFR:** (December, 2020 – Present; 9 months)

- [Oxygen Planner for States in India](#) – a tool for forecasting district-wise weekly oxygen demand of COVID-19 patients and scheduling supply to meet the requirement.
- Currently assisting a course on Machine Learning as a Teaching Assistant at the School of Technology & Computer Science.
- Studied probability distribution of the hospitalization duration among the COVID-19 fatalities in Karnataka and compared the distributions of the first and second waves for Bengaluru City.

- Periodically gathered and reported incremental cases, fatalities and Shifted Case-Fatality Ratios (SCFR) for Mumbai, Maharashtra, India and the world.
- Monte-Carlo simulation modelling of COVID-19 pandemic: implemented vaccination intervention for an SEIRD model.

#### **Analytics-oriented project at TCS: (July, 2019 – November, 2020; 1.4 years)**

- Contributed to the development of an Analytics Framework for the Deutsche Bank.
- Work involved
  - Big-Data Analytics using Java and Spark for Business Insights Reporting
  - Python-based Process Automation for status-reporting
- The framework was used for the retrieval, tracking and reporting of the resource-utilization metrics of a Distributed Cluster.
- Developed Java-based micro-services to retrieve, transfer and handle the extracted data.

#### **Final-Year Engineering Project: (July, 2018 – June, 2019; 1 year)**

- Worked on the project titled: **Trigger Algorithm Development using a  $\mu$ -TCA-based FPGA**, under the guidance of Dr. Raghunandan Shukla at the Tata Institute of Fundamental Research (TIFR), Mumbai.
- Contributed to the ongoing development of a classification algorithm to filter out noise from the data acquired by the sensors of the Large Hadron Collider (LHC) of the European Organization of Nuclear Research (CERN).
- Work involved:
  - Proof-of-Concept **implementation** of Unsupervised Machine Learning using a  $\mu$ -TCA-based Field-Programmable Gate Array (FPGA)
  - FPGA-based Hardware Programming in VHDL
  - UART-based FPGA-Computer Communication Interface in C++
  - Circuit-Level programming of ML algorithms

#### **Undergraduate Internship: (July, 2017 – June, 2018; 1 year)**

- Interned on the [Project LHCInfo O2O](#) of the **AlCaDB** team of the **CMS Collaboration** of **CERN** at the Department of High-Energy Physics (**DHEP**), **TIFR**, Mumbai, under the guidance of Prof. Shashikant Dugad and Dr. Ravindra Verma.
- Contributed to the development of a C++-based framework for retrieving LHC-related sensor readings as well as metrics and persisting them in a special-purpose database designed for virtually reconstructing the collision sequence for analysis.
- Work involved:
  - Big-Data framework in C++ for virtual reconstruction of LHC events
  - Python-based pipelines composed of C++-based Database Handling services for the retrieval and storage of scientific data
  - Scheduling and management of pipelines on CERN servers to record LHC-data for reconstruction

## Publications & Contributions

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- Juneja S., Saptharishi R., Srivastava P., Mittal D., Noolkar A., Eeshan A., (2021), [\*Oxygen Planner for States in India\*](#). A tool for forecasting district-wise weekly oxygen demand of COVID-19 patients and scheduling supply to meet the requirement.
- Noolkar A., Patel G., (2020), [\*COVID-19 Tracker\*](#). Github-based project for tracking and visualizing the spread of COVID-19 pandemic [globally](#) and within [India](#).
- Verma R., Noolkar A., (2018), *Added the CTPPS & ECAL attributes to CondFormats/LHCInfo*. Contributed to the CMS Software through the pull requests [#22527](#) and [#22668](#).
- Noolkar A., Bhanushali H., (2018), [\*Entry, Descent & Landing Sequence and Propulsion Systems for Soft Landing on Europa\*](#). Presented at the “Touch The Jovian Moon” Mission-Design Competition of the Liquid Propulsion Systems Centre, Indian Space Research Organization.
- Articles on Astronomy written in [Marathi](#) in the *Khagol Vishwa* (Khagol Mandal’s e-magazine):
  - का झेपावे अंतराळात? (२०१९). *खगोल विश्व जागतिक अंतराळ सप्ताह विशेषांक - ५*, १-४.  
[Why Reach Out into Outer Space? (2019). *World Space Week Edition - 5*, 1-4.]
  - आढावा २०१७ मधील खगोलीय घडामोडींचा (२०१८). *खगोल विश्व अंक - ३*, ६-९.  
[Review of Astronomical Developments of 2017 (2018). *Khagol Vishwa Edition - 3*, 6-9.]
  - शोध परग्रहावरील जीवसृष्टीचा (२०१७). *खगोल विश्व अंक - २*, १०-१२.  
[Search for Extra-terrestrial Life (2017). *Khagol Vishwa Edition - 2*, 10-12.]
  - विज्ञान, अवकाश आणि संशोधन (२०१७). *खगोल विश्व अंक - १*, १०-१२.  
[Science, Space & Research (2017). *Khagol Vishwa Edition - 1*, 10-12.]

## Courses & Workshops

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- [NLP Specialization](#), 2020 (4-Course Specialization, deeplearning.ai, Coursera)
- [Deep Learning Specialization](#), 2019 (5-Course Specialization, deeplearning.ai, Coursera)
- [Machine Learning](#), 2017 (Online Course, Stanford University, Coursera)
- Ground-Station Workshop, 2017 (Pratham, IIT Bombay)
- Introduction to Cryptology, 2016 (Online Course, IIT Roorkee, NPTEL)

## Activities & Achievements

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- **Winner** of the “Touch The Jovian Moon” Mission-Design competition at the **Liquid Propulsion Systems Centre, ISRO**. (May, 2018)
- Participant at the **ACM-ICPC 2018 Regional Round** at the Amrita School of Engineering, Coimbatore. (December, 2017)
- **Student of The Year** (Higher Education)
  - Somaiya Vidyavihar group of institutions, September 2018.
- **Outstanding Boy Student** (Higher & Technical Education)
  - Somaiya Vidyavihar group of institutions, September 2018.
- **Master Nirmala** (Outstanding Boy Student)
  - Nirmala Convent High School, January 2013.
- **Founder, [Infinite Loop](#)** – The Programming club of KJSIEIT. (Founded: January, 2017)
- **Founder, Vyom** – The Astronomy Club of KJSIEIT. (Founded: January, 2017)
- **Mentor, New Leap Initiative** – The Satellite Club of KJSIEIT. (July 2017 – June 2019)
- Member of the **Table Tennis** team of the KJSIEIT (inter-collegiate level).

## Professional Association & Affiliations

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- Tata Institute of Fundamental Research, Mumbai (Research Fellow; December, 2020 – Present)
- Tata Consultancy Services (Employee; July, 2019 – November, 2020) [Currently on a sabbatical]
- [IUMS Students' Module](#), Govt. of Maharashtra (A committee for digital reformation of Higher Education, Panellist; June, 2018 – June, 2019)
- [AlCaDB Group](#), [CMS Experiment](#), CERN (Member; July, 2017 – June, 2018)
- [Tata Institute of Fundamental Research](#), Mumbai (Project Intern; July, 2017 – June, 2019)
- [Khagol Mandal](#) (Astronomy Club, Member; 2014 – Present)
- [Infinite Loop](#), KJSIEIT (Programming Club, Founding Curator; January, 2017 – January, 2018)
- [Vyom](#), KJSIEIT (Astronomy Club, Founding Curator; January, 2017 – January, 2018)
- [New Leap](#), KJSIEIT (Artificial Satellite Club, Mentor; July, 2017 – June, 2019)

## Skills & Proficiency

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- Proficient programming and systematic debugging capabilities with a quick grasp over new functionalities and languages.
- Programming Experience:
  - *Python, C++, Java*: Curricular and project-related purposes, competitive programming, in-depth experience.
  - *Octave, MATLAB*: Curricular purposes, moderate experience.
  - *Root, shell*: Project requisites and related purposes, detailed experience.
  - *VHDL*: Project requisite, in-depth experience.
  - *HTML, CSS & JavaScript*: project-related purposes, detailed experience.
- Natural Languages: Marathi, Hindi, English & basic Sanskrit.
- Collaborative experience in a diverse range of teams, advisory committees and panels.

## Other Interests

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Table Tennis, Swimming, Astronomy, Cosmology, Propulsion Systems, Indian Languages & Linguistics, Indology, History, Stock Markets, AI in Video Games.