



# Sameer Pande

## Education

2017- **B.Tech. Computer Science and Engineering, Indian Institute Of Technology, 2021(expected) Delhi, CGPA 9.34/10.**

2017 **Class XII Maharashtra State Board, Shri Shivaji Science College, Nagpur, - 93.5%.**

2015 **Class X CBSE, Narayana Vidyalayam, Nagpur, Percentage - 98.0%.**

## Publications

June 2020 **The Great TCP Congestion Control Census, ACM SIGMETRICS, Boston, USA.**

## Internships & Research Projects

May - July 2019 **TCP Census, Systems & Networks Lab, Dr.Ben Leong, National University of Singapore.**

- Built a tool to probe websites and determine the TCP protocol they used by looking for characteristics such as reaction to bandwidth change, delay and different types of losses.
- Made the process scalable by exploiting parallelism.
- Built a central monitoring system to schedule tasks across the globe:
- Designed different network profiles to test websites which seemed to use unknown TCP Congestion Control Algorithm. Identified different unknown rate-based variants of TCP deployed by various organizations.
- Used Python and ExpressJS to build the framework

July - December 2019 **Enhancing Mammogram classification using patient's history, Dr.Chetan Arora, IIT Delhi.**

- Trained ResNet50 with Squeeze & Excitation blocks to classify mammograms based on birad values.
- Parsed patient history records and designed feature vectors to incorporate in the model
- Generated visualizations to identify location of cancer.
- Modified existing architecture of ResNet50 to meet the needs of our model.
- Increasing test accuracy about 2-2.5% by incorporating new feature vectors and retraining on previous base model parameters

## Course Projects

January 2020 **Scene Rendering Software, Computer Graphics, C++.**

- Built a rendering software from scratch using C++ and GLFW.
- Implemented Ray Tracing and Shadows
- Implemented Camera and rotation of scenes

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- October 2019 **CIFAR10 & CIFAR100 Classification**, *Machine Learning, Python.*  
Achieved classification accuracy of 85% & 64% for CIFAR10 and CIFAR100 respectively by building a modifying existing VGG model with less than 1 hour of training time
- September 2019 **Cannon Game Bot**, *AI, C++.*  
Built an AI bot that plays the Game of Cannon. Used Depth First Search techniques with alpha-beta pruning, memorization etc. to enhance bot performance in the game of Cannon
- August 2019 **DNA Sequence Matching**, *AI, C++.*  
Used local search algorithms to determine how closely a set of DNA sequences can be mapped to each other
- August 2019 **Secure Messaging Infrastructure**, *Computer Networks, Java.*  
Created a messaging infrastructure, which can allows secure communication between all registered users on central server. The encryption is end-to-end. Each user has a signature which can be used to verify identity of the sender.
- January-May 2019 **Multicycle ARM based processor**, *Computer Architecture, VHDL.*  
Developed an ARM based 32-bit multi-cycle processor in VHDL on a Basys3 board
- April 2019 **Krivine and SECD Compiler**, *Programming Languages, OCaml.*  
Built two compilers (one Krivine and other SECD) for a toy language that facilitates recursion, definitions, closures etc.

## Scholastic Achievements

- 2019-20 **IIT Delhi Merit Award**, from **Alumni Batch of 1983**, for excellent academic performance at IIT Delhi.
- 2017-18 **IIT Delhi Merit Award**, for being in **top 7%** among **850** students for 1st and 2nd semester
- 2017 Secured **All India Rank 104** in **JEE Advanced 2017** for admission to IITs among 200,000 students who qualified JEE Mains 2017
- 2017 Secured **All India Rank 68** in **JEE Main 2017** among 1.2 million students
- 2015-2016 Selected as **Indian National Mathematical Olympiad Awardee(INMO)** for being in **top 35** students at national level and selected for **Orientation cum Selection Camp for International Mathematical Olympiad(IMO)** conducted by **HBCSE, TIFR**
- 2015-2016 Selected as **Kishore Vaigyanik Protsahan Yojana(KVPY) Scholar** after securing **All India Rank 89** in KVPY examination, by **IISc Bangalore**
- 2015 Selected as **NTSE(National Talent Search Exam) Scholar** for being in **top 1000** students by **NCERT**(National Council for Educational Research and Training)

## Courses

- Basic Optimization Methods, Linear Algebra and Differential Equations, Calculus, Probability and Stochastic Processes, Introduction to Electrical Engineering, Signals and Systems

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Computer Science Operating Systems, Distributed and Parallel Computing, Computer Graphics, Theory of Computation, Analysis and Design of Algorithms, Computer Networks, Artificial Intelligence, Machine Learning, Data Structures and Algorithms, Digital Logic and System Design, Discrete Mathematics, Computer Architecture, Signals and Systems, Programming Languages, Design Practices

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