

# PURVA TENDULKAR

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## EDUCATION

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**College of Engineering, Pune, Maharashtra, India**

July '18

*B.Tech* in Computer Engineering

Cumulative GPA: **9.10/10** (**7<sup>th</sup>** among 90 students)

## EXPERIENCE

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**Nanyang Technological University**

May '17 - August '17

*Visiting Researcher under [Arvind Easwaran](#) and [Anupam Chattopadhyay](#)*

*Singapore*

- Studied and analyzed well known attacks on existing Cyber Physical Systems. Modeled some of these attacks using a cross-platform modeling tool, [Metro II](#). Used Metro II to model the complex [Stuxnet attack](#) and analyzed the safety and security specifications for the Natanz nuclear power plant. Demonstrated the challenges in modeling such complex attacks and the shortcomings with respect to vulnerability analysis in existing CPS modeling frameworks.

**Indian Institute of Technology, Bombay**

May '16 - July '16

*Summer intern under [Varsha Apte](#)*

*Mumbai, India*

- Worked on EvalPro (a project of [Bodhitree](#)), a Django webapp being used in the CSE Department of IIT Bombay for handling computer related assignments, tests, submission and automated evaluation. Built a Statistics section showing assignment submission and evaluation statistics using CanvasJS. Added a backend feature for teachers to create scheduled or on-demand assignments. Fixed several front-end bugs to improve the webapps UI/UX.

## SCHOLASTIC ACHIEVEMENTS

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- Recipient of the [Pratibha Eaton Excellence Award](#) (January 2017).
- Department topper in *Operating Systems, Digital Signal Processing, Digital Systems and Data Structures and Algorithms Lab*.
- Recipient of the prestigious [Maharashtra Talent Search](#) scholarship.
- Recipient of the Middle School (2006) and High School (2009) State Government Scholarships.
- Percentile score of 99.06 in JEE Mains 2014 among 1.4 million candidates.
- Percentile score of 99.93 in HSC State Board Examination 2014.
- Reached the finals and represented Maharashtra State in the Computer and Science Quiz competition organized by [Computer Society of India](#) in 2011.

## PROJECTS

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**Web-based Monitor and Control of a Bioreactor System**

May '17 - April '18

*B.Tech Project under [Neelima Iyer](#)*

*Senior Principal Scientist, CSIR-NCL*

- Working on an Embedded System application for remotely monitoring on-site parameters of a bioreactor plant including temperature, pressure, flow and PH value at [CSIR - National Chemical Laboratory](#). Using microcontrollers based on the ARM7 family onwards, the collected information will be updated on the server using Ethernet communication. A Django-based web application will contain diagnostic and management information and include detailed schematics and animations to represent the current states of the machine under its control. Advanced security features will be added at the network level. We intend to examine and explore the different real-time considerations and constraints in a bioreactor SCADA system.

## Dynamic Memory Management

*Data Structures & Algorithms Lab under [Abhijit Meenakshi](#)*

July '15 - November '15

*Assistant Professor, CoEP*

- Designed a model of heap to handle dynamic allocation and reallocation of memory chunks as an improvisation of K&Rs implementation of a Storage Allocator (section 8.7). Wrote my own malloc(), free(), calloc() and realloc() functions in C using system calls. Managed memory obtained from system calls using a singly circular linked-list.

## Breaking the Captcha

*Software Engineering Lab under [Tanuja Pattanshetti](#)*

January '17 - April '17

*Assistant Professor, CoEP*

- Trained a simple Feedforward Neural Network using Python (TensorFlow and Numpy libraries) to recognize alphanumeric characters. Used this network to recognize characters of CAPTCHA codes with an accuracy of 95%. Demonstrated how security breaches can occur using this technique.

## Personal Projects

January '15 - April '15

- Wrote a set of Python scripts to scrape e-mails and automate e-receipt sending for College of Engineering Pune, Model United Nations.
- Wrote code to automatically poke people on Facebook using Selenium.
- Made an IMDb rating scraper to allow the user to see the IMDb rating of any movie using Python (BeautifulSoup).

## RELEVANT COURSES

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- Computer Science** - Data Structures & Algorithms, Design and Analysis of Algorithms, Discrete Structures & Graph Theory, Theory of Computer Science, Database Management, Software Engineering, Programming Languages, Compilers<sup>2</sup>, Advanced Unix Programming<sup>12</sup>.
- Systems and Networking** - Operating Systems, System Programming, Concurrent Programming in Embedded Systems<sup>1</sup>, Computer Networks, Mobile and Ad-hoc Networks<sup>12</sup>, Cryptography and Network Security<sup>2</sup>.
- Electrical Engineering** - Digital Signal Processing, Microprocessors, Computer Architecture, Digital Systems.
- Mathematics** - Linear Algebra, Ordinary Differential, Univariate & Multivariable Calculus, Vector Calculus, Partial Differential Equations, Experimental Designs and Data Analysis (Statistics)<sup>1</sup>.

## TECHNICAL SKILLS

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- Strong** - C/C++, Python (with Django & BeautifulSoup), JavaScript
- Familiar** - MATLAB, PHP, MySQL
- Tools** - Git, Phabricator, GDB (Debugger), L<sup>A</sup>T<sub>E</sub>X

## RESPONSIBILITIES & TALKS

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- Director of Finance, COEP Model United Nations** (2014-16) - Led the Finance team and managed the budget for this internationally recognized [conference](#) having over 300 participants from all over India.
- Talk** - Presented an [IEEE paper](#) on TCP Vegas in the Computer Department at CoEP. Analyzed the improved performance of TCP Vegas over TCP Reno.
- Discipline Leader and House Vice Prefect** (2009-2011) - Organized and headed house sports festival, socials and gatherings.

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<sup>1</sup>Elective

<sup>2</sup>Courses taken in Fall 2017

## EXTRACURRICULAR

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- **Debate Club** - Winner at several National and State level debate competitions in British and Asian Parliamentary debate competitions at reputed institutes like Indian Law School, Symbiosis Law School, Symbiosis Arts School and Army Institute of Technology.
- **Art and Drawing** - "A" grade in Intermediate drawing examination conducted by Maharashtra State Government.
- **Music** - Pursuing Sangeet Visharad (Bachelor of Arts) in Harmonium instrument conducted by [Akhil Bharatiya Gandharva Mahavidyalaya](#).
- **Dance** - Completed Bharatanatyam Arangetram (first stage performance) and passed Praveshika Poorna Examination.
- **Sports** - Recipient of many prizes in Swimming, Hockey and Athletics (100 meters, 200 meters and cross country). Winner at the District Level in 100 meter sprint.

## REFERENCES

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**Arvind Easwaran**

Assistant Professor

School of Computer Science and Engineering

[webpage](#) ◇ [email](#)

**Anupam Chattopadhyay**

Assistant Professor

School of Computer Science and Engineering

[webpage](#) ◇ [email](#)

**Varsha Apte**

Professor

Department of Computer Science and Engineering

[webpage](#) ◇ [email](#)

**Vandana Inamdar**

Head of Department

Department of Computer Engineering and IT

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