PURVA TENDULKAR

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EDUCATION

College of Engineering, Pune, *Maharashtra, India* July '18
B.Tech in Computer Engineering
Cumulative GPA: **9.10/10** (**7th** *among 88 students*)

EXPERIENCE

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

- Recipient of the Pratibha Eaton Excellence Award for presenting solutions using Augmented and Virtual reality for Eaton power plants (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

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.

Breaking the Captcha January '17 - April '17
Software Engineering Lab under Tanuja Pattanshetti *Assistant Professor, CoEP*

· Analysed an existing trained Feedforward Neural Network made using Python (TensorFlow and Numpy libraries) to recognize text-based Captcha. Demonstrated how security breaches can occur using this technique by performing extensive testing, complexity analysis, verification and validation.

Dynamic Memory Management July '15 - November '15
Data Structures & Algorithms Lab under Abhijit Meenakshi *Assistant Professor, CoEP*

· Designed a model of heap to handle dynamic allocation and reallocation of memory chunks as an improvisation of Kernighan & Ritchies implementation of a Storage Allocator in their book "The C Programming Language". 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.

Personal Projects January '15 - May '15

· Wrote a set of Python scripts to automatically read registration emails and send personalized e-receipts 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

- **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[2], Advanced Unix Programming[1,2], Multicore Technologies[3].
- **Systems and Networking** - Operating Systems, System Programming, Concurrent Programming in Embedded Systems[1], Computer Networks, Mobile and Ad-hoc Networks[1,2], Cryptography and Network Security[2], Cyber Security & Forensics[3].
- **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)[1].

TECHNICAL SKILLS

- **Strong** - C/C++, Python (with Django & BeautifulSoup), JavaScript
- **Familiar** - MATLAB, PHP, MySQL
- **Tools** - Git, Phabricator, GDB (Debugger), LaTeX

RESPONSIBILITIES & TALKS

- **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.
- **Technical Presentation** - Presented an IEEE paper on TCP Vegas in the Computer Department at CoEP. Analyzed the improved performance of TCP Vegas over TCP Reno.
- **Mentorship** - Co-organized a seminar to share my research internship experiences and to guide juniors in applying to them.

[1] Elective
[2] Courses taken in Fall 2017
[3] Tentative course plan for Spring 2018

EXTRACURRICULAR

- **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 (equivalent to Bachelor of Arts) in Harmonium instrument conducted by Akhil Bharatiya Gandharva Mahavidyalaya. Completed **15 years of training** in Indian Classical Music.
- **Dance** - Performed Arangetram (first stage performance) after completing **8 years of training** in the Bharatnatyam dance form. 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

Arvind Easwaran
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Anupam Chattopadhyay
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