

ARCHIT CHECKER

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EDUCATION

Ashoka University
3rd Year Undergraduate
Department of Computer Science

August 2017 - Present
CGPA: 3.85/4
Major CGPA: 3.86/4

RESEARCH INTERESTS

Computer Architecture, Operating Systems, Architectural Security

RESEARCH IN PROGRESS

AMBOP: Adaptive Multiple Best Offset Prefetcher
Arup Mondal, Sarabjeet Singh, Archit Checker, Manu Awasthi

INTERNSHIPS

Lehigh University
HearMyCI
Dr. Michael Burger

Research Intern
Summer 2019

- Led technical development on an app to provide **cochlear implant simulations** to the caregivers of children with hearing loss.
- Used **Digital Signal Processing** Techniques to accurately simulate cochlear implant models of the top 3 CI companies.
- Developed a prototype **web application using Django and Python** with functionality for user profiles and customization.

Trivedi Centre for Political Data
Surf
Dr. Sudheendra Hangal

Full Stack Development Intern
Winter 2018

- Worked on adding features to Surf - a name resolution software for Indian Political Data.
- Added functionality for reading **custom datasets and ID, Column, and Sort spec changes**.
- **Mined normalization rules using Edit-Distance** to improve the Surf clustering algorithm.

PROJECTS

Enron e-mail Dataset Clustering
Dr. Ravi Kothari, Ashoka University

Nov 2019 - Dec 2019

- Used LDA to do Topical Modelling of the Enron e-mail Dataset.
- Best achieved coherence value of 0.58 with 5 topics and perplexity value of -8.2 with 7 topics.
- Visualizations can be found **here** and **here**. Full report - **here**.

Architectural Exploration of Memory Hierarchies
Dr. Manu Awasthi, Ashoka University

September 2019 - Present

- Studied about various **side-channel attacks**, and Principles of Secure Processors and Architectures.
- Studied about **Prime + Probe, Flush + Reload, and Evict + Reload** attacks.
- Mounted Flush + Reload on GnuPG and Implemented the Spectre attack.

Memory Systems Evaluation

March 2019 - May 2019

Dr. Manu Awasthi, Ashoka University

- Implemented a **Tree Pseudo-LRU** replacement policy in **ChampSim** and evaluated it.
- Studied the effects of various possible bit indexing schemes for **bimodal branch predictors** by implementing a simulation in Python.
- Studied emerging memory technologies like **Phase Change Memory (PCM)**, **Spin-Transfer Torque Ram (STT-RAM)**, **Resistive random-access memory (ReRAM)** and **3D stacked memory**.

ClassifierC

September 2018 - November 2018

Dr. Goutam Paul, ISI Kolkata

- Implemented a **Naive Bayes Classifier**, and a **K-Means Clustering Algorithm in C**.
- Used Python to pre-process various datasets (Iris, Pima Indian, Loan Prediction, Black Friday etc.) and surveyed accuracy on the C implementations.

Ruhi

December 2017 - January 2018

Independent Project

- Implemented a web-application for the Ruhi tutors for automatic allocation, feedback, and report management.

AWARDS AND HONORS

- Qualified for the Regionals - International Collegiate Programming Contest (**ICPC**) November 19
- Selected for Undergraduate Architecture (uArch) Workshop at **ISCA 2019** April 19
- Secured a position in **Dean's List** for excellent academic performance. All Semesters
- Won the first prize in IIM Indore's Leadership competition - Chaitanya. September 18
- Finalist in Digital Masala Challenge hackathon by Facebook and YKA. December 2017

TECHNICAL SKILLS

Programming Languages	Python, C, Java, C++, Assembly, Shell Scripting
Simulators	ChampSim, Mastik
Frameworks and Tools	Django, Flask, Numpy, Pandas, Keras, L ^A T _E X

TEACHING

- TA [Spring 20] - Operating Systems
- TA [Monsoon 19] - Fundamentals of Computer Programming Student Feedback - **4.67/5**
- Helpdesk Tutor - Computer Organization and Systems

LEADERSHIP

Computer Science Academic Representative

2019 - 2020

Ashoka Academic Advisory Board

CS Curriculum Developer

2019

Neev Program - Teaching Underprivileged Children

RELEVANT COURSEWORK

- Architectural Exploration of Memory Hierarchies · Advanced Computer Architecture · Operating Systems · Design and Analysis of Algorithms · Computer Security and Privacy · Introduction to Machine Learning · Advanced Programming · Theory of Computation