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RESEARCH INTERESTS	Primary: Databases, Information Retrieval, Data Mining, Distributed Systems Secondary: Machine Learning, Natural Language Processing	
EDUCATION	Bachelor of Technology (Hons.) Computer Science and Engineering Indian Institute of Technology Bombay, Mumbai CGPA: 8.77/10.00	July 2011 - Present
	Higher Secondary Examination (CBSE, India) Maharishi Vidya Mandir, Chennai, 95.8%	July 2011
	Matriculation (CBSE, India) DAV Senior Secondary School, Chennai, 97.6%	July 2009
PATENTS & PUBLICATIONS	Automated Linguistic Personalization of Ad Messages for Targeted Campaigns Rishiraj Saha Roy, J Guna Prasaad, Aishwarya Padmakumar, and Ponnurangam Kumaraguru <ul style="list-style-type: none"> • P4592-US, United States Patent Office, filed on 10 December 2014 (Patent pending) • Accepted at CICLing 2015 and Springer LNCS Series (main volume) 	
RESEARCH EXPERIENCE	Undergraduate Research Project, IIT Bombay <i>Improving Read Latency for Write-Optimized Index Structures</i>	<i>Ongoing</i> S. Sudarshan
	<ul style="list-style-type: none"> • Indexing techniques optimized for a higher write throughput generally compromise on read performance and also encounter problems such as write pauses, eg. LSM Trees • We are working on designing and implementing an indexing technique optimized for both read and write latencies on HBase, an open source implementation of Google's Big Table 	
	Bachelor's Thesis, IIT Bombay <i>Phrasal Verb Simplification</i>	<i>Ongoing</i> Pushpak Bhattacharya
	<ul style="list-style-type: none"> • We are working on simplifying phrasal verbs, which are difficult to handle for both non-native speakers of English and machine translation from English to resource poor languages • We identify complex phrasal verbs, disambiguate using word space models and replace them with valid substitutes obtained from bilingual information with another language 	
	Internship, Adobe Research Labs Bangalore <i>Automated Linguistic Personalization of Ad Messages</i>	<i>Summer 2014</i> Rishiraj Saha Roy
	<ul style="list-style-type: none"> • Designed and developed a novel method of personalizing ad messages based on the linguistic style of a target segment identified by age, gender, occupation, location • Extracted appropriate modifiers from advertisements and inserted them in the text to decrease cross entropy with language model of target segment 	
	Internship, Chennai Mathematical Institute <i>Synthesis Modulo Bisimulation</i>	<i>Ongoing</i> Madhavan Mukund
	<ul style="list-style-type: none"> • We are working on the open problem of synthesizing distributed transition systems from global specifications with bisimulation as equivalence criterion • We have gathered evidence that the collapse in state space when one obtains the bisimulation quotient of the distributed transition system can be quantified 	

KEY PROJECTS

Cost Metric for Query Optimization*Autumn 2014**Implementation Techniques for Relational Database Systems Course Project*

S. Sudarshan

- Enhanced size estimation using additional histogram information and thereby the efficiency of the cost metric in the PyroJ query optimizer to achieve resourceful plans for execution

Virtual Memory Management System*Spring 2014**Operating Systems Course Project*

Dhananjay Damdhare

- Developed multi-level page table virtual memory management for an UNIX-based OS
- Designed and implemented efficient data structures and algorithms for handling process memory allocation, swap space management and page replacement strategies

Parallel Processing in Multi-core Architectures*Autumn 2013**Computer Architecture Course Project*

Bernard Menezes

- Analyzed performance gains in multi core architecture for representative problems such as Merge Sort, Matrix Multiplication, Monte-Carlo Simulation and the Bellman Ford algorithm
- Estimated the degree of parallelism through techniques such as the Karp Flatt metric

Control Flow Language Processor*Spring 2014**Implementation of Programming Languages Course Project*

Udhay Khedkar

- Developed a language processor for control flow graph dumps generated by gcc
- Implemented a compiler as well as an interpreter for the language

L2 Readability*Spring 2014**Undergraduate Research Project*

Pushpak Bhattacharya

- Performed a complete study of existing techniques in estimating readability of a text, in particular for second language learners
- Created benchmark metric for readability for Indian L2 learners based on NCERT textbooks for grade levels from 4 to 12

Inferring Power Relations from Social Interactions*Spring 2014**Natural Language Processing Course Project*

Pushpak Bhattacharya

- Studied how conversational behaviour in social interactions can reveal power relations among participants
- Explored efficacy of various learning models in characterizing linguistic styles impacted by power differentials

TALKS & SEMINARS

Linguistic Personalization using Social Media**Autumn 2014**

NLP-AI Group, CFILT, IIT Bombay

Text Simplification and Readability**Autumn 2014**

Lexical Resources Group, CFILT, IIT Bombay

Hopfield Networks and Applications**Spring 2014**

Guide: Prof. Pushpak Bhattacharya, IIT Bombay

Longest Increasing Subsequence in Streaming Data**Autumn 2013**

Guide: Prof. Nutan Limaye, IIT Bombay

TEACHING

Head Teaching Assistant, Computer Programming & Utilization

- Served as the head teaching assistant for Autumn 2014, Spring 2015 and the edX version of the course, managing a team of 10 junior teaching assistants
- Also served as a junior teaching assistant for a previous offering of the course, responsible for teaching and mentoring course projects for a group of 14 students

Teaching Assistant, Implementation of Programming Languages

- Served as a teaching assistant for the undergraduate level course on compiler and interpreter design with an active lab component

SCHOLASTIC ACHIEVEMENTS

- Secured **Zonal Rank 3** in the AISSE conducted by CBSE 2009
- Secured **All India Rank 326** in **IIT-JEE 2011**, among 5 lakh candidates 2011
- Declared successful at the **Indian National Mathematical Olympiad (INMO)** 2011
- Awarded **Kishore Vaigyanik Protsahan Yojana (KVPY) Scholarship** 2011
- Awarded **Narotam Sheksharia Scholarship** for Undergraduate Studies 2012

POSITIONS OF RESPONSIBILITY

Manager, Web and Coding Club 2013-14

- Overall Co-ordinator of one of the largest student clubs with over 1200 members. Organized 22 events comprising talks and workshops over a wide range of programming topics
- Promoted programming as a hobby and as a necessary academic skill by creating an informal engaging environment

Institute Student Mentor 2014-15

- Incharge of a group of 10 freshmen to help adjust to the new environment, academically as well as socially and guide them towards holistic development
- Participated in the Mentor Training Workshop organised by Tata Institute of Social Sciences, Mumbai

Department Academic Mentor 2014-15

- Involved in mentoring and helping junior undergraduates of Computer Science
- Assisting students who are part of the Academic Rehabilitation Program at IIT Bombay in establishing themselves and taking complete course curriculum

REFEREES

Prof. S. Sudarshan

Head of Department, CSE
IIT Bombay, Mumbai
phone: *available on request*
email: *available on request*

Prof. Pushpak Bhattacharya

Vijay and Sita Vashee Chair Professor
IIT Bombay, Mumbai
phone: *available on request*
email: *available on request*

Prof. Madhavan Mukund

Dean of Studies
Chennai Mathematical Institute
phone: *available on request*
email: *available on request*

Rishiraj Saha Roy

Computer Scientist
Adobe Research Labs Bangalore
phone: *available on request*
email: *available on request*