Gaurav Veda

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Citizenship	Indian	**Visa**	F1

Research Interests: Machine Learning, Applied Algorithms

Education

Carnegie Mellon University (CMU), Pittsburgh, USA	Ph.D. candidate, Computer Science Advisor: Prof. Carlos Guestrin	2005 - Present
Indian Institute of Technology (IIT), Kanpur, India	B.Tech., Computer Science & Engineering Advisor: Prof. Sumit Ganguly Thesis: Personal Information Systems GPA: 9.8/10, Rank: 3/55	2001 - 2005

Research Experience

LP approach for solving POMDP's **January 2006 - Present**

In this project, we are trying to come up with a linear programming (LP) formulation that can be used to solve Partially Observable Markov Decision Processes (POMDP's) either exactly or approximately. *Joint work with Prof. Carlos Guestrin, Prof. Ronald Parr, Christopher Wakefield and Mary McGlohon.*

Personal Information Systems **B.Tech. Thesis**
Prof. Sumit Ganguly, Sarvesh Dwivedi (IIT Kanpur) **August 2004 - April 2005**

We defined a new paradigm for information management in a system. The user does not have to specify the location for storing a file. The system automatically classifies the file based on the activity/sub-activity that it belongs to (with or without user input). Activities can be user defined or inferred by the system. The system also supports retrieval of files based on keywords that might not be present in the file but are *related* to it.

Document Fingerprinting and Copy Detection **Seminar Course**
Prof. Sumit Ganguly (IIT Kanpur) **August - November 2004**

We came up with a new randomized algorithm for document fingerprinting and (full or partial) copy detection that provides a high probabilistic guarantee and has small, deterministic space bounds.

Automatic Application Specific Processor Instruction Set Extension **Summer Internship**
Prof. Paolo Ienne, Processor Architecture Laboratory, EPFL, Switzerland **May - July 2004**

Designed and implemented a pseudo-polynomial time graph algorithm for the automatic determination of Processor Instruction Set Extensions. Implementation language: C++

Achieving security through hardware & Anonymous Attestation **Seminar Course**
Prof. Deepak Gupta (IIT Kanpur) **January - April 2004**

Surveyed the Trusted Computing Infrastructure. This is a new paradigm in computing whereby security against malicious software attacks is achieved through hardware protection mechanisms. I also looked at various schemes for anonymous attestation.

Linear Programming Applications **Summer & Winter Internship**
Prof. Narendra K. Karmarkar, Tata Institute of Fundamental Research (TIFR), Pune **May - July, December 2003**

Understood and implemented the linear programming formulation of the 3-SAT and other NP-complete problems based on Karmarkar's interior point algorithm for linear programming. Implementation Language: Fortran 90.

Major Course Projects

Enhancing the NachOS operating system **IIT Kanpur**
Course: Operating Systems **August - November 2003**

Implemented some important kernel functions like memory management, scheduling, synchronization, input/output etc. for this educational OS. Implementation language: C++

'ajgar': A Python Compiler **IIT Kanpur**
Course: Principles of Compiler Design **January - April 2004**

Built a compiler for python that generates MIPS assembly code. This project gave me an idea of the issues involved in compiling an interpreted language like python. Implementation language: C

Peer-to-peer systems: An overview **IIT Kanpur**
Course: Advanced Computer Networks **January - April 2005**

In this reading project, I read about various P2P systems (such as Chord, CAN, Freenet, Viceroy, Kademlia), consistent hashing, the impact of geometry on DHT's etc.

Note: Reports for completed projects are available at http://www.cs.cmu.edu/~gveda/reports.shtml

Academic Honors

- Awarded Carnegie Mellon School of Computer Science Graduate Fellowship (2005 - present).
- Awarded Notional Award for Academic Excellence every year at IIT Kanpur.
- Secured All India Rank 41 among approximately 150,000 candidates in the Indian Institute of Technology Joint Entrance Examination (IITJEE) 2001.
- Awarded the NTSE (National Talent Search Examination) scholarship by the Government of India in 1999.

Professional courses undertaken

- Data Structures and Algorithms, Design and Analysis of Algorithms, Discrete Mathematics, Theory of Computation, Data Streaming: Algorithms and Practice, Applied Matrix Theory
- Computer Networks, Advanced Computer Networks, Operating Systems, Principles of Compiler Design, Principles of Database Systems, Computer Organization, Computer Architecture
- Computational Geometry, Applied Stochastic Processes, Artificial Intelligence
- Principles of Programming Languages
- **At CMU:** Machine Learning, Intermediate Probability, Advanced Data Structures, Advanced Computer Architecture

Computing Skills

Languages	C, C++, Java, Fortran 90, LaTeX, MIPS assembly, Python
Operating Systems	GNU/Linux, Windows, Solaris

Hobbies and Interests

Playing ultimate frisbee, table tennis, cricket, volleyball and other games and outdoor activities. Watching movies. Meeting people and talking :)

References

Available upon request

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