

Sanchit Misra

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RESEARCH INTERESTS Computational Biology, Data mining, Machine Learning, Parallel Computing, GPUs, Application Specific Computer Architecture, High performance computing.

EDUCATION Ph.D. Computer Engineering, Northwestern University, Sep 2006 - Present
Thesis topic: High throughput sequence mapping for Next Generation sequencing.
Advisor: Prof. Alok Choudhary
GPA: 4.0/4.0
B.Tech. Computer Science and Engineering, IIT Kharagpur, India, May 2005
Thesis topic: Power Aware Technology Mapping in FPGA-based implementation of circuits. GPA: 8.95/10.0

SOFTWARES AGILE: AliGnIng Long rEads

PUBLICATIONS S. Misra; A. Agrawal; W. K. Liao, A. Choudhary. Anatomy of a Hash-based Long Read Sequence Mapping Algorithm for Next Generation DNA Sequencing. *Bioinformatics* 2010; doi: 10.1093/bioinformatics/btq648.

A. Agrawal, S. Misra, D. Honbo, and A. Choudhary. MPIPairwiseStatSig: Parallel Pairwise Statistical Significance Estimation of Local Sequence Alignment. In *ECMLS proceedings of HPDC 2010*, pp. 470-476.

S. Misra, R. Narayanan, W.K. Liao, A. Choudhary and S. Lin. pFANGS: Parallel High Speed Sequence Mapping for Next Generation 454-Roche Sequencing Reads. In *Proc. Ninth IEEE International Workshop on High Performance Computational Biology (IPDPS 2010)*, April, 2010, Atlanta, GA.

S. Misra, R. Narayanan, S. Lin and A. Choudhary. FANGS: High Speed Sequence Mapping for Next Generation Sequencing Reads. In *Proceedings of ACM Symposium of Applied Computing (ACM SAC)*, March, 2010, Sierre, Switzerland.

R. Narayanan, S. Misra, S. Lin and A. Choudhary. Mining Protein Interactions from Text using Convolution Kernels. In *Proc. Workshop on Advances and Issues in Biomedical Data Mining (PAKDD 2009)*, Bangkok, Thailand, April 2009.

S. Misra, R. Narayanan, D. Honbo and A. Choudhary. (Book Chapter) High Performance Distributed Data Mining. *Next Generation of Data Mining*, 2008, CRC Press.

D. Bild, S. Misra, T. Chantem, P. Kumar, R. P. Dick, X. S. Hu, L. Shang, and A. Choudhary. Temperature-Aware Test Scheduling for Multiprocessor Systems-On-Chip. In *Proc. Int. Conf. Computer-Aided Design*, San Jose, CA, Nov. 2008.

A. Das, S. Misra, S. Joshi, J. Zambreno, G. Memik and A. Choudhary. An Efficient FPGA Implementation of Principal Component Analysis based Network Intrusion Detection System. In *Proc. of Design, Automation & Test in Europe (DATE)*, Munich,

Germany, March 2008.

PROFESSIONAL
EXPERIENCE

Google Inc., Mountain view, California USA

Summer Intern

June 2010 to September 2010

- Worked as a member of Product Search Local team. Among other things, developed an interactive framework to evaluate their results. Worked with C++ and Java and learned various technologies including mapreduce, sstable, stubby, xml APIs, web-scraping, etc.

Intel, Hillsboro, Oregon USA

Summer Intern

June 2007 to September 2007

- Designed and implemented a scalable and functional prototype for Platform trust establishment using C++ on Unix.

Trilogy E-Business Software India Pvt. Ltd., Bangalore, INDIA

Technical Analyst

July 2005 to July 2006

- Member of Trilogy Insurance Services team.
- Worked on the development of Agency Radar, a software to help insurance agents in United States in finding the best premium and carrier for a particular policy.

INRIA, Lyon, FRANCE

Summer Intern, Compsys team

May 2004 to July 2004

- Designed and implemented a generic interface for hardware accelerators using VHDL.

Northwestern University, Evanston, Illinois USA

Research Assistant

September 2006 to present

- **Center for Ultra-Scale Computing and Information Security**
Worked on multiple research projects. Designed and implemented reconfigurable data mining architectures. Currently working on building high speed DNA sequence mapping tools for next generation sequencers using algorithms, efficient data structures, parallel computing and GPUs.

Advanced VLSI Laboratory, IIT Kharagpur, INDIA

Summer Intern

May 2003 to June 2003

- Introduced to front-end and back-end of VLSI chip design

PROFESSIONAL
COURSES

Graduate: Advanced Data mining, Design and analysis of Algorithms, Computer architecture, Parallel computing, VLSI system design, Temperature-Aware and Low-Power Design and Synthesis of Integrated Circuits and Systems, Parallel and Distributed Database Systems, Digital Image Analysis, Statistical Methods for Bioinformatics and Computational Biology, Random Processes in Communication and Control, Computational Complexity, Introduction to Formal Specification and Verification, Algorithmic Mechanism Design, Proteomics

Undergraduate: Computer Organization and Architecture, Operating Systems, Compiler Construction, Computer Networks, Artificial Intelligence, Software Engineering, Algorithms for Bioinformatics, Database Management Systems, Multimedia Applications, Machine Learning, Discrete structures, Programming and Data Structures, Logic Design, Algorithms, Formal Language and Automata Theory, Applied Graph Theory, VLSI Testing and Verification and CAD for VLSI Design

TECHNICAL SKILLS Programming: C, C++, Java, CUDA, OpenMP, MPI, Python, Matlab, SQL, HTML, JavaScript, XML, JSP, VHDL and VBA
Software: Clementine, Weka, XLSTAT, Blast, Mentor Graphics Design Manager, Xilinx EDK, ModelSim
Operating Systems: Unix, Linux, Solaris, Windows

HONORS, AWARDS AND EXTRA ACADEMIC ACTIVITIES

Top 10 team in KDDCUP 2008

National top 1% in India in Physics and Chemistry Olympiad in the year 2001.

All India Rank 206 amongst approximately 150,000 applicants in IITJEE, 2001(Joint Entrance Examination for IIT).

Stood 3rd in the Mathematics Olympiad conducted by Chotanagpur Mathematical Society in Ranchi, India in the year 2000.

President, Indian Graduate Students and Scholars Association, Northwestern University, August 2009-July 2010

Vice President, Indian Graduate Students and Scholars Association, Northwestern University, August 2008-July 2009