TAPAS RANJAN SAHOO

901N, Euclid Avenue, Apt 101, Tucson, AZ – 85719
Phone: (520) 621-4089
URL: http://www.cs.arizona.edu/~tapas
Email: tapas@cs.arizona.edu

OBJECTIVE: Seeking a full-time position in Research/ Software Development.

SUMMARY OF PROFESSIONAL SKILLS:

- 4+ years of experience and proficiency in C, Java
- Extensive knowledge and experience in client-server architectures, compilers, database systems, networking, software security.
- Strong background in algorithms & data structures, strong analytical skills.

EDUCATION:

Master of Science (MS), Computer Science, University of Arizona, Tucson, Arizona **GPA 3.60/4.00** Grad Date: May 2003.
Bachelor of Technology (BTech), Computer Sciences & Engineering, Regional Engineering College (REC), Calicut, India **GPA 3.86/4.00** Grad Date: June 2000

PROFESSIONAL WORK EXPERIENCE:

May 2002 – present **Research Assistant** **Department of Computer Science, University of Arizona.**

- Active member in the *SandMark* project. The research focuses primarily on software watermarking and code obfuscation.
- Projects involved in:
  - Study, implementation and analysis of various watermarking and code obfuscation algorithms.
  - Design and implementation of the code statistics module of *SandMark* system.

Jan 2002 – Apr 2002 **Database System Analyst** **Division of Academic Resources, University of Arizona.**

- Designed and implemented a database system for Testing and Evaluation of student. The back end was developed in MS SQL server, with MS access as front end.

July 2000 – July 2001 **Software Test Engineer** **Wipro Technologies Ltd., India, - MSSBU Test Automation Team, Cisco Development Facility.**

- Test automation for ORION: Cisco broadband 8085 series switches.
  (Team of 3; Duration: 4 months; Tcl/Tk Platform: POPEYE I [Cisco MGX8085 series switches])
- Testing and maintenance of SES-PNNI controller.
  (Team of 6; Duration: 5 months; Tcl/Tk Platform: POPEYE (I, II) [Cisco MGX8085 series switches], BPX)

SKILLS:

Operating Systems: Linux, Solaris, Windows 9x/NT/2000.
Languages and Tools: C, C++, Java, Shell, Assembly (80x86), Fortran, LISP, SQL, Java bytecode, BCEL, BLOAT
Database Systems: MS SQL Server 7.0, MS Access.
Protocols/API: TCP/IP, UDP, Socket Programming, UNIX Network Programming.

RELEVANT COURSEWORK:

Computer Architecture, Advanced Operating Systems, Distributed Mobile Systems, Compilers, Theory of Computation, Security Through Obscurity, Design and Analysis of Algorithms, Computer Networks, Embedded Systems, Database Management Systems.

PROJECTS:

Operating Systems, Computer Architecture and Compilers:

- **DLX pipelined processor architecture** – Implemented a simulator for DLX pipeline architecture. The simulator incorporated the 5 stage standard pipeline with data forwarding, stall handling, and hits/misses in data memory (Team of 2; Duration: 2 months; C, Linux/Solaris)

- **Cache-memory organization** – Built a trace driven simulator to demonstrate the advantages of using instruction and data cache in a multi-level memory hierarchy consisting of L1-L2 cache and memory along with victim buffer. (Team of 2; Duration: 2 months; C, Linux/Solaris)

- **A Distributed File System -** Implemented a distributed file system using Client-Server model with LRU cache mechanism. (Team of 2; Duration: 2 months; Linux, Sun RPCs, C, Unix Kernel calls)

- **An Interactive Shell –** Designed and implemented an interactive UNIX shell with identical features of *csh*. The shell incorporated features such as job handling, I/O redirections, etc. (Individual project; Duration: 1 month; Sun Solaris, C)

- **Compiler Optimizer -** Wrote a *Compiler Optimizer*, which manipulates intermediate language code (ILC) to reduce execution time on a single processor system. Worked with complex data structures and addressed tricky correctness issues. (Individual project; Duration: 4 months; Sun Solaris, GNU C Compiler, C)

- **Parsers -** Implemented various parsers (SLR, LR1, LALR) for context free grammars. (Individual project; Duration: 1 month; Sun Solaris, GNU C Compiler, C)

Networks, Distributed Mobile Computing, Embedded and Wireless Systems:

- **Optimizing leakage energy in I-cache –** Studied and designed an algorithm for optimizing static energy in instruction cache for energy conscious embedded devices. (Team of 2; Duration: 2 months)

- **Robust End-to-End TCP/IP Protocol Stack** – Implemented a robust end-to-end TCP/IP network protocol stack supporting multiple file transfers. Features of TCP like slow start algorithm, cumulative ACKS, congestion control, AIMD, fast retransmit were supported. Reliable and in-order delivery was provided over an unreliable network with packet losses and delays (UDP and Relay). (Team of 2; Duration: 3 months; C, Linux/Solaris)

- **Billing and QOS system for 802.11 networks –** Tested and compared several billing and QOS schemes for 802.11 networks and developed a new QOS model and demonstrated it's superiority over the popular techniques in terms of fairness and flexibility. (Team of 4; Duration: 3 months; Linux, Network Programming, C)

Database Systems:

- **MINIREL** – Implemented a multi-user Database System from scratch. The system was designed and implemented hierarchically as five layers: Paged File Layer (page abstraction), Heap File Layer (unordered set of records), Access Method Layer (B+-tree indexing), Front End Layer (selection, projection, join algorithms, etc), Transaction Management Layer (various locking protocols, concurrency and consistency control). Heavy coding and a grasp on the fundamentals were tested in this project. Rigorous automated testing was done. (Team of 2; Duration: 4 months; Sun Solaris, GNU C compiler, C)

- **Data Mining and Data Warehousing –** Implemented and analyzed the APRIORI algorithm for data mining for knowledge extraction from commercial databases. (Team of 4; Duration: 3 months; SQL, Oracle Developer 2000, C)

OTHER WORKS/ HONORS:

- Ranked **13** out of about **10,000** students at the 10+2 State Level Board Exam, Orissa, India 1996
- Ranked **44** out of about **30,000** competitive students at the Engineering/Medical Joint Entrance Examination, Orissa, India. 1996.
- Grader for undergraduate level Compilers course, fall 2001
- Active member of seminar group currently holding discussions on software security and cryptography
- Seminars on ATM switches and Frame Relay during work experience in Wipro Technologies Ltd., India

REFERENCES:

Available on request.