

## Prajna Prakash Parida

**Home Address:**

Phone: (603) 966 - 4620  
prajna.parida@aya.yale.edu

**Work Address:**

Phone: (603) 897 - 3110  
prajna.parida@oracle.com

**Objective** To work in a challenging position, that utilizes and hones my analytical, problem-solving and computing skills, within a strong group setting.

**Summary** Most recent work in the area of configuration management using distributed computing systems architectures that focus on scalability, data security, communications security, data privacy and access-control through authentication, and, attempt to simultaneously provide the "mutually conflicting" capabilities of high-volume storage (data-warehousing functionality) together with on-demand high-availability of data and services.

**Interests** Configuration Management, CMDB, Information Systems, Databases, Data Mining, Data Warehousing, Language Design, Interpreters and Compilers technology, Type Systems, Formal Verification, Computational Logic, Object-oriented Design, Cryptography, secure communications protocols, client-server technology.

**Languages & Skills**

- *Primary Languages:* Java (Core, J2SE, J2EE), SQL, PL/SQL, C, Perl, Unix shell.
- *Secondary Languages:* VBScript, C++, ML, Haskell, Pike, Scheme, Python/Jython, MIPS/x86 Assembly, C#, Signal, Verilog, Esterel.
- *Verifiers/Theorem Provers:* Coq, Twelf, Sigali, VIS, SMV, BuDDy BDD package.
- *Tools/Libraries:* Lex/Flex, Yacc/Bison, Java DOM and SAX Parsers, XML Schemas, Apache Ant, L<sup>A</sup>T<sub>E</sub>X, XMLMiner, UNIX/POSIX APIs for C and Perl, html/cgi, J2EE Servlet technology, WSDL, JDBC, Java SSL libraries (JSSE), Java Cryptography (JCE), Eclipse, Oracle JDeveloper, Oracle SQL Developer, XPath and XQuery.
- *OS:* Linux, Unix, Solaris, and Windows 2000/NT/XP.
- *Other:* Oracle Databases (8i, 9i, 10g, 11g), Application Server, WebLogic Server, and Enterprise Manager components.

**Education**

- **Master of Science (M.S.)** in Computer Science (May 2005)  
Department of Computer Science,  
**Yale University, USA.**
- **Bachelor of Technology (B.Tech.)** in Computer Science (May 2002)  
Department of Computer Science and Engineering,  
**Indian Institute of Technology (IIT) Kharagpur, INDIA.**  
GPA: 9.02/10.00

**Experience**

SOFTWARE ENGINEER  
June 2005 – Present

**Oracle Corporation, USA**

- Responsible for the full life-cycle development of a *Java* multi-threaded distributed client-server infrastructure, on a *Linux/Unix* platform, with significant *PL/SQL, C, Perl, XML* and *Unix shell* components, to model and collect hardware and software configuration data for systems hosting a range of Oracle software including databases, application servers, web-caches, OC4J containers, EBS, OMS, portals, RAC and *iAS* clusters, WebLogic servers. Also additional port-specific client-side development on the *Windows NT* platform.

- SSL handshake using *JSSE* for upload of configuration data to a configuration management database in a secure fashion using a restricted customized trusted keystore.
- Semantic features and some software configuration data models through *XML* to be consumed by a *Java* engine, and the database schemas for these new data.
- A Support Hub infrastructure, in *Java* using *J2EE*, *JSSE*, *JCE* libraries, with RSA-encrypted tunneling for network routing in case of configuration data upload for hosts with restricted network connectivity. Designed a cryptographic protocol that handles versions of varying cryptographic strengths and ensures security while tunneling through an untrusted Hub.
- Database *PL/SQL* APIs to create software targets manually rather than through configuration upload.
- Handling historical version information for configuration data, using *PL/SQL*, in the repository, for upload of configuration data that arrive out-of-order in time.
- Automatic discovery/mining of Oracle Application Server farms, using *Java*, *XML* and *Perl*.
- Worked with distributed databases (RACs) on *Linux* and *Windows NT*.
- Worked on multimedia and *XML* databases.
- Processing and storage of medical images in a database in the *DICOM* format, extraction, manipulation and validation of metadata from a *DICOM* image using *XML*.
- Designed a prototype for constraint validation of *DICOM* objects. Designed and implemented a performance benchmark tool using *PL/SQL* and *Java*.

GRADUATE STUDENT

**Yale University, USA**

August 2003 – May 2005

Teaching Fellow: "*CS112 - Introduction to Programming*" with *Java* (Spring 2005).

Teaching Fellow: "*CS112 - Introduction to Programming*" with *C#* (Fall 2004).

- Worked on interoperability between theorem-proving systems with proofs represented in *OMDoc* format, which is an *XML* application.
- Translation, using *ML*, of proofs in the *OMDoc* format into proof objects for the *Twelf* logical framework and type-checker.

**Graduate Courses Taken:**

Theory of Distributed Systems,  
Artificial Intelligence,  
Quantum Computing,  
Advanced Topics in Programming Languages,  
Functional Programming,  
Data Mining,

Formal Semantics,  
Theoretical Methods in Computer Science,  
Mobile Computing and Wireless Networks,  
Numerical Computation,  
First Year Russian,  
Language Based Security.

RESEARCH CONSULTANT

**IIT Kharagpur, INDIA**

June 2002 – July 2003

- Worked on a research project titled "*Coverage Metric for Model Checking and their Relationship to Simulation Coverage*", sponsored by **Intel Corp., USA**.
- Worked on formal property weakening for coverage analysis.
- Implemented a satisfiability checker for LTL temporal logic using *C*, *lex* and *yacc*.

SUMMER INTERN  
May 2001 – July 2001

INRIA Rhône-Alpes, FRANCE

- Worked in the robotics team *BIP* (now called *POP-ART*) with Eric Rutten.
- Work consisted of specifying in the synchronous programming language *Signal*, an excavator system with predefined control tasks, determining synthesis objectives, synthesizing the controller using the model checking tool *Sigali*, and finally constructing a graphical simulation in *Java* for observing the behavior of the controlled system.

UNDERGRADUATE STUDENT  
July 1998 – May 2002

IIT Kharagpur, INDIA

- Worked on Genetic Algorithms with Prof. Rajeev Kumar.
- Developed a Pareto Converging Genetic Algorithm (PCGA) for multiobjective design optimization of communication networks.
- Two primary objectives were optimized, namely network delay and installation cost, subject to satisfaction of reliability and flow constraints.
- Results were communicated in the *Proceedings of the IEEE Congress on Evolutionary Computation (CEC2002)*.

**Relevant Course-work:**

Programming and Data Structures,	Design and Analysis of Algorithms,
Computer Organization and Architecture,	Switching Theory and Logic Design,
Operating Systems,	Formal Languages and Automata Theory,
Compiler Design,	Graph Theory,
Computer Networks,	Parallel Algorithms,
Real Time Systems,	Embedded Systems,
Systems Programming,	Database Management Systems,
Software Engineering,	Discrete Structures.

**Other Experience**

- Designed and implemented a centralized (NAPSTER-like) and a distributed (GNUTELLA-like) P2P file sharing system in *Pike*.
- A compiler for a large subset of C using *lex* and *yacc* (including passing of pointers and 2-D arrays as function arguments).
- A semantic interpreter, in *Haskell*, for a simple hybrid (imperative + functional) language.
- A simple modeling of quantum computing in *Haskell*.
- Virtual memory and paging in an OS simulator (NachOS).
- A CASE tool in *Java*, for Structured Software Design and drawing structure charts.
- A firewall for the Institute Information Cell at IIT Kharagpur using Linux *iptables*.
- An assembler in C for Intel x86 architecture.
- A network simulator in C++*SIM*.
- A library information system in *Java*.
- A simple 4-bit processor and memory, along with instruction set, capable of *LOAD*, *STORE*, *JUMP* and simple arithmetic operations.

- Publications**
- Rajeev Kumar, Prajna P. Parida and Mohit Gupta, "**Topological Design of Communication Networks using Multiobjective Genetic Optimization**", in *Proceedings of the 2002 IEEE Congress on Evolutionary Computation (CEC2002)*, pp 425-430, Hawaii, May 2002.
  - Hervé Marchand, Prajna Prakash Parida and Éric Rutten, "**Discrete Controller Synthesis Made Easy: A User's Manual for Sigali**", INRIA Technical Report, INRIA Rhône-Alpes, France, 2002.
- Awards & Achievements**
- Yale University Graduate Fellowship, 2003.
  - Ranked 862 (out of more than 150,000 candidates) in the Indian Institutes of Technology Joint Entrance Examination (IIT-JEE), 1998.
  - Gold Medal and Certificate of Merit in the Indian National Physics Olympiad (INPhO), 1998 for being among the top 30 in India.
  - Within top 1% in India and Certificate of Merit in INPhO 1997.
  - Ranked 14<sup>th</sup> in the Regional Mathematics Olympiad, 1997.
  - National Talent Search Scholarship in 1996, by the National Council of Educational Research and Training (NCERT), New Delhi.
- Work Authorization**                      Permanent Resident
- References**                                      - Available upon request -