
# Nishanth Nagendra

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## TECHNICAL SKILLS

| | |
|---|---|
| *Programming:* | C, C++ |
| *Platform:* | Linux |
| *Programming: Tools/Libraries* | Pthread, C POSIX library, OpenMP, MPI, Debugging tools(gdb, gprof, valgrind, splint), Basic level usage of C++ STL, FICO Xpress Optimizer library |
| *Project Mgmt.:* | ViM Editor, Basic level usage of github, Version mgmt. and defect tracking using IBM's Rationale Software, CVS, Basic level usage of Visual studio and Eclipse IDE's |

## PROFESSIONAL EXPERIENCE

**Senior R&D Engineer** **Aug 2011 – Sep 2013**
*Mavenir Systems* *Bangalore, India*

- Low level design, and, Implementation of new features in the AirMessenger messaging product. Involved in the enhancement of several modules relating to SMPP, billing, LDAP, traffic logging, message receiver/delivery, message store, queuing, retrieval and retrying functionalities.
- Testing, Documentation and Product support for bug fixes after live deployment.
- *Tech Specs: C, Posix Library, Wireshark, gdb*

**Software Engineer** **Mar 2010 – Apr 2011**
*Aricent Technologies* *Bangalore, India*

- Implementing the support for migration of a VoIP product from IPv4 to IPv6. This involved low level design, and, enhancement of protocol specific modules like SIP, DIAMETER etc.
- Underwent training for 2 months on UMTS technology, product based training on RNC, Uplane software. Performed sustenance, feature enhancement and resolved small bugs.
- Simulation of X2AP – an LTE specification [at Aricent Training Facility]. A short team project which involved programming with sockets, threads, Unix IPC facilities like message queues, and, pipes.
- *Tech Specs: C++, Socket Programming, Wireshark, gdb, gcov, splint.*

**Student Assistant** **Jul 2014 – Present**
*Chair for Computer Architecture,*
*Technical University of Munich*

- **InvasIC – Invasive Computing (Ongoing)**
  1. Research and development of an early prototype to support the resource management and scheduling of adaptive parallel applications on future *High Performance Computing* systems.
  2. Collaborate and coordinate with research group members who are involved in developing the invasive version of MPI and resource mgmt. to support adaptive MPI applications.
  3. Developing the support for visualization of runtime scheduling decisions in the vampir tool.
  4. *Tech Specs: C, Posix library* (*Multithreading), Distributed Programming (MPI)*

- **AutoTune – Automatic Online Tuning (Completed)**
    1. Enhancement of the performance capping plugin to implement and evaluate a simple linear regression technique for modeling the performance of an OpenMP application for energy efficiency and using the same for making simple predictions.
    2. Evaluating the compiler flags selection plugin by testing it against various benchmark scientific applications for precision, robustness and performance.
    3. *Tech Specs: C++, Pthread library, OpenMP*

## EDUCATION

**Master of Science in Informatics** **Munich, Germany**
*Technical University of Munich, Oct 2013 – Jul 2016 (GPA: 1.3 / 5.0)*

**Bachelor of Computer Science and Engineering** **Bangalore, India**
*Atria Institute of Technology, 2005 – 2009 (GPA: 79.50 / 100)*
*Thesis Topic : Implementation of an Image Editing Software and A JPEG Compression Utility with the help of Matlab*

## ACADEMIC RESEARCH PROJECTS

**Master Thesis: Job Scheduling for Adaptive Applications in Future High Performance Computing Systems** **Nov 2015 – Jul 2016**

Design, develop and evaluate a dynamic and flexible scheduling strategy for adaptive parallel applications on future *exascale* systems. This approach is based on a new negotiation protocol between batch and runtime schedulers and their new algorithms respectively. The framework has been developed in C on SLURM which is highly scalable multithreaded and distributed open source software.

**A Protocol for Integration of Invasive Resource Management into Existing Batch Systems** **Apr 2015 – Oct 2015**

Design, develop and evaluate a new negotiation protocol in order to integrate invasive resource management into existing batch systems. The open source product SLURM is used for the development purpose. A new plugin has been developed in C for slurm along with a dummy runtime scheduler for the protocol evaluation. Evaluation was performed using simulation.

**Implementation of a Metaheuristic for the Discrete Network Design Problem** **Dec 2014 – Nov 2015**

Literature survey was done on the various metaheuristic approaches to solve discrete/continuous traffic network design problems that are usually non-convex in nature and of the form of a bi-level linear program. Design and Implementation of a Genetic Algorithm in C along with the Modeling and Solving of the optimization problem using FICO Xpress Optimizer library in C++. Evaluated the algorithm under various settings with small to large scale traffic networks for correctness, performance and effectiveness.

**Parallelization of Applications using OpenMP and MPI** **Apr 2014 – Aug 2014**

Parallelization of the given heat simulation code in C using OpenMP. Parallelization of the minimax and alpha-beta search techniques in the given two player game (C++) called "Abalone" using MPI.

## PERSONAL SKILLS

*Organizational Skills:* Experience working in large product teams both in a flat and vertical hierarchy. Strong experience of the full software development lifecycle.

*Language Skills:* Proficient - Kannada, English and Hindi.
Basic – German, Sanskrit

*Hobbies and Interests:* Dancing, Cooking, Biking, Playing Violin