

Anh Nguyen-Tuong

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Interests Researching, developing and applying technology to advance the state-of-the-art in high-value (safety-critical, mission-critical, business-critical) distributed systems.

Education Ph.D., Computer Science, August 2000, Univ. of Virginia, Charlottesville, VA.

Topic: Integrating Fault Tolerance in Grid Applications

M.C.S., Computer Science, July 1995, Univ. of Virginia, Charlottesville, VA.

Topic: The Mentat Assistant Debugger: Post-mortem Debugging.

B.S., *Magna Cum Laude*, Computer Science, Physics, December 1992, The College of William & Mary, Williamsburg, VA.

Experience *Research Manager*, September 2003-current, University of Virginia, Charlottesville, VA.

- CoPI on two highly competitive grants: *Dependable Grids* (NSF ITR), *Genesis: a Framework for Achieving Component Diversity* (DARPA Self-Regenerative Systems program).
- Leveraged industrial contacts to initiate collaboration with major vendors (IBM, Symantec Research).
- Designed strategy for research program direction. Led effort to promote research group awareness in the community.
- Managed undergraduate student thesis.

Senior Software Architect, June 2000-August 2003, Avaki Corp., Charlottesville VA.

- Senior member of engineering team, oversaw transition from academic project to robust, commercial offering.
- Led engineering in developing applications highlighting the strengths of Avaki's software platform for presentation to venture capital firms. First round of funding (\$6M) was awarded in 2001.
- Co-authored and presented Avaki's Simple Grid Naming Protocol (SGNP) draft specification at the Global Grid Forum 2002.
- Managed, designed and co-implemented development of web portal for executing and monitoring grid applications.
- Designed and implemented failover capabilities to increase availability of Avaki's grid product.
- Increased reliability of Avaki's products via heterogeneous, automated testing.

Chief Architect, June 1999-August 2000, Earth Music Network.

- Designed 3-tiered web architecture for Earth Music Network, a Hindi film music site. The web site receives 1500+ hits a day (more than one per minute), and continues to exist as one of the most popular sites on the web for searching for Hindi music.

Doctoral studies, 1993-2000, University of Virginia

- Developed first architectural framework for composing fault-tolerance techniques with grid applications *transparently*.
- Developed fault-tolerant, self-load-balancing architecture for bag-of-tasks applications. Demonstrated reliability and performance with DNA/protein sequence comparison applications.
- Architected implementation model for the Legion grid system. Primary objective was to achieve extensibility to easily incorporate functionality such as security, accounting, auditing, monitoring and fault-tolerance in applications. All Legion objects were built based on this model.

Software Developer, 1991-1993, Thomas Jefferson National Laboratory, Department of Energy, Accelerator Controls group.

- Developed user-interface for monitoring hardware devices.
- Developed 3D rendering software for visualizing electron beam.

Development Experience

- Industry expert on compute-grid and data-grid systems
- C/C++, Java/J2EE
- PHP, Unix scripts (bash, ksh)
- log4j, Javadoc, JUnit for application-level logging, documentation, application testing
- SQL
- JBoss and Tomcat for application deployment
- Perforce and CVS for source control
- TestTrack for bug tracking
- Ant and make for project development
- Parallel and Distributed Systems, Message Passing Interface (MPI), Parallel Virtual Machine (PVM).

Teaching Experience

Graduate Teaching Assistant, *Software Engineering*, Dept. of Computer Science, Univ. of Virginia, Spring 1993.

Awards

Samual Alexandar Fellowship 1996.

High Performance Computing Challenge Award, Supercomputing 1995.

Best Paper, ELECSIM 1995.

Papers and Publications

Refereed Journal Articles

Support for Extensibility and Site Autonomy in the Legion Grid System Object Model, Lewis, M. J., Ferrari, A. J., Humphrey, M. A., Karpovich, J. F., Morgan, M. M., Natrajan, A., Nguyen-Tuong, A., Wasson, G. S., Grimshaw, A. S., *Journal of Parallel and Distributed Computing*, 2003.

The Legion Grid Portal, Natrajan, A., Nguyen-Tuong, A., Herrick, M., Clarke, B. P., Humphrey, M., Grimshaw, A. S., *Grid Computing Environments 2001, Concurrency and Computation: Practice and Experience*, 2001.

Using Reflection for Incorporating Fault-Tolerance Techniques into Distributed Applications, Nguyen-Tuong, A., Grimshaw, A. S., *Parallel Processing Letters*, Vol. 9, No. 2, pp. 291-301, 1999.

Campus-Wide Computing: Early Results Using Legion at the University of Virginia, Grimshaw, A. S., Nguyen-Tuong, A., Lewis, M., Hyett, M., *Journal of Supercomputing Applications and High Performance Computing*, Vol. 11, No. 2, 1997, pp. 129-43.

Book Chapter

From Legion to Avaki: The Persistence of Vision, Grimshaw, A. S., Natrajan, A., Humphrey, M. A., Lewis, M. J., Nguyen-Tuong, A., Karpovich, J. F., Morgan, M. M., Ferrari, A. J., *Grid Computing: Making the Global Infrastructure a Reality*, eds. Fran Berman, Geoffrey Fox, Tony Hey, November 2002.

Refereed Conference Proceedings

Grid-Based File Access: The Legion I/O Model. White, B. S., Grimshaw, A. S., Nguyen-Tuong, A., *Proceedings of the Ninth IEEE International Symposium on High Performance Distributed Computing*, Pittsburgh, PA, August 2000.

Enabling Flexibility in the Legion Run-Time Library, Viles, C. L., Lewis, M. J., Ferrari, A. J., Nguyen-Tuong, A., Grimshaw, A. S., *International Conference on Parallel and Distributed Processing Techniques (PDPTA '97)*, Las Vegas, NV, June 1997.

Exploiting Data-Flow for Fault-Tolerance in a Wide-Area Parallel System, Nguyen-Tuong, A., Grimshaw, A. S., Hyett, M., *Proceedings of the 15th International Symposium on Reliable and Distributed Systems*, pp. 1-11, October 1996.

To disaggregate or not to disaggregate, that is not the question, Natrajan, A., Nguyen-Tuong, A., *Electronic Simulation Conference (ELECSIM)*, 1995, Voted **Best Paper**.

Standards body

Secure Grid Naming Protocol, Apgar, J., Grimshaw, A. S., Harris, S., Humphrey, M., Nguyen-Tuong, A., *Draft specification of a naming protocol for grid systems submitted to the Global Grid Forum*, February 2002.

Technical Reports

Dispelling Seven Myths about Grid Resource, Natrajan, A., Grimshaw, A. S., Humphrey, M., Nguyen-Tuong, A., Technical Report CS-2004-33, Dept. Computer Science, University of Virginia, August 2004.

Towards Dependable Grids, Nguyen-Tuong, A., Grimshaw, A. S., Wasson, G., Humphrey, M., Knight, J. C., Technical Report CS-2004-11, Dept. Computer Science, University of Virginia, March 2004.

Professional Activities

Opening Speaker, Symposium on Reliable and Distributed Systems, Niagara-on-the-Lake, Canada, 1996.

Program Committee, IEEE Services Computing Conference 2004.

Referee, Journal of Parallel and Distributed Computing 2001.

Referee, Intl. Conference on Parallel Processing 2000.

Referee, Intl. Conference on Supercomputing 1999.

Referee, Transactions Parellel and Distributed Systems 1999.

Referee, Intl. Parallel Processing Systems 1999.

Referee, Symposium on Reliable Distributed Systems 1996.

Referee, Parallel and Distributed Computing Systems 1996.

References available upon request