

# Curriculum Vitae

## Sangmi Lee Pallickara

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### 1. Research Interests

My research interests are in the area of large-scale scientific computing; specifically, issues related to data management, resource discovery, and meta scheduling.

### 2. Education

Aug 2003            **PhD** Computer Science, *Florida State University*, Tallahassee, FL  
May 2000            **MS** Computer and Information Science, *Syracuse University*, Syracuse, NY  
Feb 1993            **BS** Physics, *Sookmyung University*, Seoul, Korea

### 3. Professional Experience

Aug 07 –            *Research Technologies*, Indiana University  
Sep 04 – Jul 07    Post Doctoral Fellow, *Department Of Computer Science*, Indiana University  
Worked with Professor Beth Plale  
May 00 – Aug 03    Research Assistant, *Department of Computer Science*, Florida State University  
Sep 01 – Aug 04    Visiting Research Associate, *Community Grids Lab*, Indiana University  
May 99 – Apr 00    Research Assistant, Northeast Parallel Architectures Center,  
*Department of Electrical Engineering & Computer Science*, Syracuse University  
Jul 92 – Jul 94     Software Engineer, Han's Software, Seoul, Korea

#### 3.1 Teaching Experience (at the *Department of Computer Science*, Indiana University)

Co-Instructor      *Fundamentals of Computer Networks*, Spring 2006. (Undergraduate course)  
Instructor          Indiana University Science Summer Camp, Summer 2005. (High School level)  
Guest Instructor    *Distributed Systems*, Spring 2005. (Graduate course)  
Guest Instructor    *Fundamentals of Computer Networks*, Spring 2005. (Undergraduate course)  
Supervision of      Fall 08 –            Chin Hua Kong: Fault detection in Grid Computing Environments  
Graduate Students   Jul 05–Aug 06      Suba Periyasami: MVC based Portal interfaces for Web-based data sharing.  
Sep 05–Aug 06      Ning Liu: Trustworthy scientific data management  
REU Program        Aug 06- Jul 07     Supervised 2 undergraduate students (Christina Hoffa and You-Wei Chaeh)  
as part of the NSF's REU program,

#### 3.2 Residency Status

US PERMANENT RESIDENT

### 4. Projects worked on

Aug 07 –    TERAGRID project  
This open scientific discovery infrastructure combines resources at eleven partner sites to create an integrated, persistent computational resource. Using high-performance network connections, the TERAGRID integrates high-performance computers, data resources and tools.

As part of my work on this project, I have designed the SWARM system. SWARM provisions a meta-scheduling framework that leverages Condor and Globus technologies to harness traditional Condor and Grid clusters. It is not unusual for these high-throughput jobs to run for several days at a time. SWARM is currently deployed in a sequencing application developed by the *Center for Genomics and Bioinformatics* at Indiana University.

- Aug 07 – POLAR GRID project  
The NSF-funded POLAR GRID project aims to understand the impact of rising sea levels and how they relate to global climate change. As part of this effort we are building science gateways that support data collection, examination and analysis for ice sheet research that would help scientists. My ongoing research activities in this project are in the area of data management encompassing issues related to metadata and storage.
- Sep 04 – LEAD (Linked Environments for Atmospheric Discovery) project:  
Jul 07 The NSF-funded LEAD project makes meteorological data, forecast models, and analysis and visualization tools available to anyone who wants to interactively explore the weather as it evolves <http://lead.ou.edu>. My research on this project has included work on data cataloging, transferring and storing schemes based on Service Oriented Architecture (SOA) principles. These issues were investigated within the context of the MYLEAD system, which I designed.
- Sep 01 – CAROUSEL  
Aug 04 The CAROUSEL project focused on developing an environment for supporting ubiquitous accesses to real-time collaborative applications in Grid settings. Devices that were supported include portable devices, such as 3G SmartPhones and 801.11b equipped PDAs and conventional desktop PCs. As part of this project, I designed a data pipelining architecture that was formally verified using Perti Nets. I also developed a protocol for reliable communications between these pervasive devices in wireless settings.

## 5. Publications

### 5.1 Peer Reviewed Publications

1. Sangmi Lee Pallickara and Marlon Pierce, "SWARM: Scheduling Large-scale Jobs over the Loosely-Coupled HPC Clusters," In Proceedings of the *IEEE International Conference on e-Science*. Indianapolis, 2008, December 7-12 2008
2. Marlon Pierce, Xiaoming Gao, Sangmi Lee Pallickara, Zhenhua Gau, and Geoffrey Fox, "QuakeSim Portal and Services: New Approaches to Science Gateway Development Techniques," (To appear) *Journal of Concurrency & Computation: Practice & Experience*. Special Issue on Computation and Informatics in Earthquake Science.
3. Yogesh Simmhan, Sangmi Lee Pallickara, Nithya N. Vijayakumar, and Beth Plale, "Data Management in Dynamic Environment Driven Computational Science," In Proceedings of the *IFIP International Federation for Information Processing*, Vol. 239, Grid-Based Problem Solving Environments, P.W. Gaffney and J.C.T. Pool. Eds. Spring Boston. pp.317-333, 2007
4. Dennis Gannon, Beth Plale, Marcus Christie, Yi Huang, Scott Jenson, Ning Liu, Suresh Marru, Sangmi Lee Pallickara, Srinath Perera, Satoshi Shirasuna, Yogesh Simmhan, Aleksander Slominski, Yiming Sun, Nithya Vijayakumar, "Building Grid Portals for e-Science: A Service Oriented Architecture," To appear *High Performance Computing and Grids in Action*, IOS Press – Amsterdam, Lucio Grandinetti editor, 2007
5. Sangmi Lee Pallickara, Beth Plale, Liang Fang, Dennis Gannon, "End-to-End Trustworthy Data Access in Data-Oriented Scientific Computing," In Proceedings of the *IEEE CCGRID 2006*: 395-400
6. Yiming Sun, Scott Jensen, Sangmi Lee Pallickara, and Beth Plale, "Personal Workspace for Large-scale Data-driven Computational Experimentation," In Proceedings of the *7th IEEE/ACM International Conference on Grid Computing (Grid'06)*, Barcelona. 2006.
7. Sangmi Lee Pallickara and Beth Plale, "Enabling End-to-End Trustworthiness in Data-Oriented Scientific Computing," In Proceedings of the *Workshop on Web Services-based Grid Applications (WGSA'06)* in association with International Conference on Parallel Processing (ICPP-06). 2006.
8. Scott Jensen, Beth Plale, Sangmi Lee Pallickara and Yiming Sun, "A Hybrid XML-Relational Grid Metadata Catalog," In Proceedings of the *Workshop on Web Services-based Grid Applications (WGSA'06)* in association with International Conference on Parallel Processing (ICPP-06). 2006.

9. Sangmi Lee Pallickara, Beth Plale, Scott Jensen, and Yiming Sun, "Structure, sharing, and preservation of scientific experiment data," In Proceedings of the *IEEE 3rd International Workshop on Challenges of Large Applications in Distributed Environments (CLADE)*, pp 107-114 , 2005.
10. Dennis Gannon, Beth Plale, Marcus Christie, Liang Fang, Yi Huang, Scott Jensen, Gopi Kandaswamy, Suresh Marru, Sangmi Lee Pallickara, Satoshi Shirasuna, Yogesh Simmhan, Alex Slominski, and Yiming. Sun, Service Oriented Architectures for Science Gateways on Grid Systems, *International Conference on Service Oriented Computing 2005*, B. Benatallah, F. Casati, P. Traverso (Eds.), LNCS 3826, pp. 21-32, 2005. Springer-Verlag Berlin Heidelberg 2005
11. Sangmi Lee Pallickara, Beth Plale, Scott Jensen, Yiming Sun, Short Paper: "Monitoring Access to Stateful Resources in Grid Environments," In Proceedings of the *IEEE International Conference on Services Computing*, Orlando, Florida, pp. 343-346, 2005.
12. Shrideep Pallickara, Geoffrey Fox, Beytullah Yildiz, Sangmi Lee Pallickara, Sima Patel and Damodar Yemme, "On the Costs for Reliable Messaging in Web/Grid Service Environments," Proceedings of the *IEEE International Conference on e-Science & Grid Computing*, Melbourne, Australia. 2005.
13. Beth Plale, Dennis Gannon, Yi Huang, Gopi Kandaswamy, Sangmi Lee Pallickara, and Aleksander Slominski, Cooperating Services for Managing Data Driven Computational Experimentation, *Computing in Science and Engineering(CiSE) magazine*, (Vol. 7, No. 5) pp. 34-43. 2005.
14. Sangyoon Oh, Sangmi Lee Pallickara, Sunghoon Ko, Jai-Hoon Kim, Geoffrey Fox, "Cost Model and Adaptive Scheme for Publish/Subscribe Systems on Mobile Environments," Proceedings of the *International Workshop on Active and Programmable Grids Architectures and Components (APGAC05)*, *Lecture Notes in Computer Science*, Springer-Verlag 3516, pp. 275-278, Atlanta, GA, 2005.
15. Sangyoon Oh, Sangmi Lee Pallickara, Sunghoon Ko, Jai-Hoon Kim, Geoffrey Fox, Publish/Subscribe Systems on Node and Link Error Prone Mobile Environments," Proceedings of the *Wireless and Mobile Systems Workshop (ICCS 2005)*, *Lecture Notes in Computer Science*, Springer-Verlag, 3515, pp. 576-584
16. Shrideep Pallickara, Geoffrey Fox, and Sangmi Lee Pallickara, "An Analysis of Reliable Delivery Specifications for Web Services," Proceedings of the *IEEE ITCC Conference on Information Technology* , 2005, Las Vegas
17. Sangmi Lee and Geoffrey Fox, "Wireless Reliable Messaging Protocol for Web Services (WS -WRM)," Proceedings of the *IEEE 2nd International Conference on Web Services (ICWS 2004)*, pp.350-357, San Diego. 2004
18. Geoffrey Fox, Sunghoon Ko, Kangseok Kim, Sangmi Lee, Sangyoon Oh, "Universally Accessible Collaboration Frameworks for Ubiquitous Computing Environments," Proceedings of the *International Conference on Ubiquitous Computing (ICUC2003)*, Seoul Korea, 2003
19. Sangmi Lee, Sunghoon Ko, Geoffrey Fox, "Adapting Content for Mobile Devices in Heterogeneous Collaboration Environments," Proceedings of the *International Conference on Wireless Networks(ICWN'03)*, pp. 211-217, 2003
20. Geoffrey Fox, Hasan Bulut, Kangseok Kim, Sung-Hoon Ko, Sangmi Lee, Sangyoon Oh, Shrideep Pallickara, Xiaohong Qiu, Ahmet Uyar, Minjun Wang, Wenjun Wu "Collaborative Web Services and Peer-to-Peer Grids," Proceedings of the *IEEE Collaborative Technologies Symposium (CTS'03)*, 2003
21. Sangmi Lee, Sunghoon Ko, Geoffrey Fox, Kangseok Kim, Sangyoon Oh, "A Web Service Approach to Universal Accessibility in Collaboration Services," Proceedings of the *International Conference on Web Services(ICWS'03)*, pp. 333-339, Las Vegas. 2003.
22. Geoffrey Fox, Sung-Hoon Ko, Kangseok Kim, Sangyoon Oh, Sangmi Lee, "Integration of Hand-Held Devices into Collaborative Environments," Proceedings of the *International Conference on Internet Computing (IC'02)* pp.231-250, 2002 Las Vegas
23. Sangmi Lee, Geoffrey Fox , Sunghoon Ko, Minjun Wang, Xiaohong Qiu "Ubiquitous Access for Collaborative Information System Using SVG," Proceedings of the *SVG OPEN Conference*. 2002, Zurich, Switzerland
24. Hasan Bulut, Geoffrey Fox, Dennis Gannon, Kangseok Kim, Sung-Hoon Ko, Sangmi Lee, Sangyoon Oh, Xi

Rao, Shrideep Pallickara, Quinlin Pei, Marlon Pierce, Aleksander Slominski, Ahmet Uyar, Wenjun Wu, Choonhan Youn, "An Architecture for e-Science and its Implications," Proceedings of the *IEEE International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS 2002)* July 2002

25. Geoffrey Fox, Sung-Hoon Ko, Marlon Pierce, Ozgur Balsoy, Jungkee Kim, Sangmi Lee, Kangseok Kim, Sangyoon Oh, Xi Rao, Mustafa Varank, Hasan Bulut, Guruhan Gunduz, Xiaohong Qui, Shrideep Pallickara, Ahmet Uyar, "Grid Services for Earthquake Science," *Journal of Concurrency and Computation: Practice and Experience in ACES Special Issue*, 14(6-7), 371-393, 2002

## 5.2 Book Chapter Contribution

1. Geoffrey Fox, Dennis Gannon, Sung-Hoon Ko, Sangmi Lee, Shrideep Pallickara, Marlon Pierce, Xiaohong Qiu, Xi Rao, Ahmet Uyar, Minjun Wang, Wenjun Wu Book chapter on "Peer-to-Peer Grids," *Grid Computing: Making The Global Infrastructure a Reality*, John Wiley & Sons, ISBN 0470853190

## 5.3 PhD Dissertation

Sangmi Lee. August 2003. A Modular Data Pipelining Architecture for Enabling Universal Accessibility in Peer to Peer Grids.

Advisors: Prof. Gordon Erlebacher, Florida State University, and Prof. Geoffrey Fox, Indiana University

## 5.4 Technical Reports

1. Sangmi Lee Pallickara, Marlon Pierce, "Orienting Scientific Data Management to Harness the Data Cloud," Digital Science Center, Indiana University, Dec, 2008
2. Geoffrey Fox, Sangmi Lee, Sung-Hoon Ko, Kangseok Kim, Sangyoon Oh, "CAROUSEL: Universally Accessible Web Service Architecture for Collaborative Applications," Community Grids Lab, Indiana University, 2002
3. Geoffrey Fox, Sung-Hoon Ko, Kangseok Kim, Sangmi Lee, Sangyoon Oh, "Status of Hand-Held Interfaces to the Garnet Collaborative Environment," Community Grids Laboratory, Indiana University, 2002
4. Sangmi Lee, "Overview of the Virtual Collaborative Network (VNC)," Department of the Computer Science, Florida State University, 2000

## 6. Significant Volunteer Activities

Organizer	Spring 2005 Grid Security Reading Group, Computer Science Department, Indiana University
Committee Member	2006 Indiana Women in Computing (INWIC) 2005 Women in Science Program (WISP) 7th Annual Research Day
Instructor	2005 ACM JETT(Java Engagement for Teacher Training), Indiana University
Assistant Instructor	2004 ACM JETT(Java Engagement for Teacher Training), Indiana University
Founding Member and President	1991-93 <i>Computing in the Physics</i> , Sookmyung University, Seoul, Korea