

Chris Mattmann, Ph.D.

CONTACT INFORMATION

Cognizant Development Engineer Member of Key Staff

Instrument and Data Systems Section
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RESEARCH INTERESTS

Software Architecture, Software Engineering, Search Engines, Information Retrieval, Resource Discovery, Distributed Computing Platforms, Large-scale, distributed systems, Data modeling, design and development of distributed data intensive systems

EDUCATION

University of Southern California, Los Angeles, CA USA

Ph.D., Computer Science, August 2007

- Dissertation Topic: "Software Connectors for Highly Distributed and Voluminous Data-intensive Systems"
- Advisor: Nenad Medvidovic

M.S., Computer Science (Multimedia and Creative Technologies), August 2003

B.S., Computer Science, December 2001

PROFESSIONAL EXPERIENCE

Instrument and Data Systems Section, NASA Jet Propulsion Laboratory, Pasadena, CA 91109 USA

Cognizant Development Engineer

Member of Key Staff

Staff Software Engineer

Associate Software Engineer

Developed science data processing system for the Orbiting Carbon Observatory Earth Science mission. Wrote proposals to government agencies incl. NASA, NSF, DOD and the NIH. Contributor to open source project out of JPL called Object Oriented Data Technology, runner-up NASA software of the year 2003. Constructed CAT Scan tracking system for NYU Medical Center on large bio-informatics task. Cognizant development engineer supervising development team, delivery, schedule and architecture on bio-informatics task. Co-investigator on winning ROSES ACCESS 2007 proposal to develop a Virtual Oceanographic Data Center.

August 2007 - present

September 2006 - present

September 2005 - present

January 2001 - August 2005

Viterbi School of Engineering, University of Southern California, Los Angeles, CA 90089 USA

Part-time Faculty

Taught graduate level course in Software Architectures (CSCI 578) to a class of over 60 students, including remote professionals. Taught both a distance education (DEN) lecture, as well as on-campus version of the class.

November 2007 - present

Tika Project, Apache Software Foundation, Forest Hill, MD USA

Committer

Voted to be a Committer by Apache Incubator Project Management Committee (PMC). Developed original proposal and plan for Tika, a content analysis toolkit, in collaboration with existing Apache Nutch committer Jerome Charron. Responsible for project direction, and leadership. Tika will provide a framework for content analysis and metadata extraction, and will be used as a plugin library to existing Apache projects, including Nutch, and Solr. Release manager for 0.1-incubating

March 2007 - present

release.

Nutch Project, Apache Software Foundation, Forest Hill, MD USA

Committer

October 2006 - present

Voted to be a Committer by Apache Lucene Project Management Committee (PMC). Contributed several patches to Apache's open source search engine project, called Nutch. Most notable were an RSS Parsing plugin, a complete redesign of the ParserFactory, Metadata container support, and an automatically generated web context file, including web parameter support to the Nutch webapp. Most of this work was done in collaboration with existing committer Jerome Charron. Release manager for 0.9 release.

Web Development and Engineering, E50.com, Inc, Hollywood, CA USA

Senior Software Consultant

September 2000 - August 2003

Led software development and backend engineering for a major Internet hosting and development company that serviced over 500 web sites. Utilized Microsoft technologies incl. ASP, MS SQL Server and engaged in requirements gathering and interaction with customers and end-users. Designed and implemented several web sites including <http://snookies.com>.

Engineering Team, Iwin.com, Inc, Westwood, CA USA

Engineering Intern

February 2000 - August 2000

One of about 4 interns tasked with developing Java-based games for target demographic of 35-55 year old adults. Participated in software design and development, constructed query result caching mechanism that optimized DB query time against MS SQL Server by 25%. Helped formulate ranking algorithm for games listed on the site.

HONORS AND AWARDS

SIGSOFT CAPS Travel Scholarship, Doctoral Symposium, ASE, Tokyo, Japan, July 2006

Travel Scholarship, Doctoral Symposium, ICSE, Shanghai, China, May 2006

Teaching Assistantship Award, Department of Computer Science, USC, September 2003, February 2004, September 2004, January 2005, January 2007

Dean's List Recipient, School of Engineering, USC, 1999

ACADEMIC EXPERIENCE

University of Southern California, Los Angeles, California USA

Part-time Faculty

November 2007-present

Taught graduate level course in Software Architectures (CSCI 578) to a class of over 60 students, including remote professionals. Taught both a distance education (DEN) lecture, as well as on-campus version of the class.

Graduate Student

August 2002 - December 2007

Includes Ph.D. research, Ph.D. and Masters level coursework and research projects. Active participant in proposal writing to funding agencies such as NASA, NSF, and the NIH.

Teaching Assistant

September 2003 - May 2007

TA for graduate level courses on Software Architectures, Software Engineering for Embedded Systems, and Operating Systems. Shared responsibility for lectures, exams, homework assignments, and grades.

- CSCI 578: Software Architectures, Spring 2005, Spring 2007
- CSCI 589: Software Engineering for Embedded Systems, Fall 2004
- CSCI 402: Operating Systems, Fall 2003, Spring 2004

Senior Grader

September 2001 - August 2003

Senior grader for graduate and undergraduate level courses on Issues of Programming Language

Design and Programming the WWW. Shared responsibility for exams, homework assignments, and grades.

- CSCI 571: Issues of Programming Language and Design, Spring 2001, Summer 2003
- CSCI 351: Programming the WWW, Fall 2001, Spring 2002

PUBLICATIONS

Refereed Journals

1. C. Mattmann, D. Freeborn, D. Crichton, J. S. Hughes, P. Ramirez, S. Hardman, D. Woollard, and S. Kelly. Transformation of OODT CAS To Perform Larger Tasks. *NASA Tech Briefs*, Vol. 32, No. 6, pp. 44, June 2008.
2. C. Mattmann. Review of: Composition inference for UML class diagrams. *ACM Computing Reviews*, Review #: CR135556, May 2008.
3. C. Mattmann. Review of: MapReduce: simplified data processing on large clusters. *ACM Computing Reviews*, Review #: CR135329, March 2008.
4. D. Woollard, N. Medvidovic, Y. Gil, and C. Mattmann. Scientific Software as Workflows: From Discovery to Distribution. *IEEE Software – Special Issue on Developing Scientific Software*, Vol. 25, No. 4, July/August, 2008.
5. C. Mattmann. Review of: Smart card applications: Design models for using and programming smart cards. *ACM Computing Reviews*, Review #: CR135205, February 2008.
6. C. Mattmann. Review of: Quality, productivity and economic benefits of software reuse: a review of industrial studies. *ACM Computing Reviews*, Review #: CR135087, January 2008.
7. J.. Steven Hughes, D. Crichton, S. Kelly, C. Mattmann, J. Crichton, and T. Tran. Intelligent Resource Discovery using Ontology-based Resource Profiles. *Data Science Journal*, Vol. 4, pp. 171-188, December 2005. Article available at: http://journals.eecs.qub.ac.uk/codata/journal/contents/4_05/4_05pdfs/DS415.pdf
8. S. Banerjee, C. Mattmann, N. Medvidovic, L. Golubchik. Leveraging architectural models to inject trust into software systems. *ACM SIGSOFT Software Engineering Notes*, vol. 30, no. 4, pp. 1-7, July 2005.

Refereed Conferences and Workshops

1. D. Crichton, P. Ramirez, C. Mattmann and J. S. Hughes. A Model Driven Architecture for Highly Distributed, Data Intensive Systems. Accepted for publication at the *DARPA Workshop on Digital Object Storage and Retrieval (DOSR)*, Chantilly, Virginia, July 15-16, 2008.
2. C. Mattmann, R. Raskin, D. Crichton. A Service Oriented Architecture for Highly Distributed and Data-Intensive Geospatial Grid Software Systems. Submitted to the *GIScience 2008 Workshop on Design of Service-Oriented Architecture (SOA) for Geospatial Science*, Park City, UT, 2008.
3. J. S. Hughes, D. Crichton, C. Mattmann. An Ontology-Based Archive Information Model for the Planetary Science Community. In *Proceedings of the 10th International Conference on Space Operations (SpaceOps2008)*, AIAA Press, Heidelberg, Germany, May 12-16, 2008.
4. A. Hart, D. Crichton, D. Johnsey, C. Mattmann, C. Patriotis, H. Kincaid, S. Srivastava, M. Thornquist. A Web-based Data Management Infrastructure for Curation, Annotation and Dissemination of Biomarker Research results for the Early Detection of Cancer. In *Proceedings of the 5th EDRN Scientific Workshop*, Bethesda, MD, March 17-19, 2008.
5. D. Crichton, M. Thornquist, S. Kelly, C. Mattmann, D. Johnsey, J. Dahlgren, D. Steling, G. Warnick, S. Reid, C. Edelstein, A. Hart, H. Kincaid. A Distributed Informatics Knowledge Environment for Biomarker Research. In *Proceedings of the 5th EDRN Scientific Workshop*, Bethesda, MD, March 17-19, 2008.

6. J. S. Hughes, D. Stelling, D. Crichton, C. Mattmann, G. Warnick, S. Reid. An Information Model for Biomarker Research. In *Proceedings of the 5th EDRN Scientific Workshop*, Bethesda, MD, March 17-19, 2008.
7. C. Mattmann, M. Khilkin, W. Rom, D. Crichton, S. Kelly, P. Rivera, J. Ko, B. Phalan, S. Sotero, E. Eylers. A Reusable Web-based CAT (CT) scan data management system for temporally characterizing Solid Nodules and Ground Glass Opacities in Lung Cancer patients. In *Proceedings of the 5th EDRN Scientific Workshop*, Bethesda, MD, March 17-19, 2008.
8. W. Franklin, D. Crichton, M. Reid, C. Mattmann, A. Hart, D. Deng, B. Logue, J. Hayes, D. Stelling. A Distributed Biomarker Atlas for Lung Research aiding the Discovery and Early Detection of Cancer Biomarkers. In *Proceedings of the 5th EDRN Scientific Workshop*, Bethesda, MD, March 17-19, 2008.
9. C. Mattmann, D. Woollard, N. Medvidovic. Exploiting Connector Knowledge to Efficiently Disseminate Highly Voluminous Data Sets. In *Proceedings of the ICSE 2008 Workshop on SHARING and Reusing architectural Knowledge - SHARK 2008*, pp. 37-40, Leipzig, Germany, May 10-18, 2008.
10. M. Khilkin, C. Mattmann, P. Rivera, J. Koh, B. Phalan, E. Eylers, S. Kelly, D. Crichton and W. N. Rom. Integrating clinical, CT and PFT patient information in a database to determine a follow-up CT interval and the malignant potential of solid and ground glass pulmonary nodules. In *Proceedings of American Thoracic Society (ATS)*, Toronto, Ontario, Canada, May 16-21, 2008.
11. M. Khilkin, C. Mattmann, P. Rivera, J. Koh, B. Phalan, E. Eylers, S. Kelly, D. Crichton and W. N. Rom. An integrated clinical, CT, PFT database to better define an at risk population to screen for lung cancer. In *Proceedings of American Thoracic Society (ATS)*, Toronto, Ontario, Canada, May 16-21, 2008.
12. C. Mattmann, V. Perrone, S. Kelly, D. Crichton, A. Finkelstein, and N. Medvidovic. A Reference Framework for Requirements and Architecture in Biomedical Grid Systems. In *Proceedings of the 2007 IEEE International Conference on Information Reuse and Integration (IEEE IRI-07)*, pp. 418-423, Las Vegas, NV, August 13-15, 2007.
13. C. Mattmann, D. Woollard, N. Medvidovic, R. Mahjourian. Software Connector Classification and Selection for Data-intensive Systems. In *Proceedings of the ICSE 2007 Workshop on Incorporating COTS Software into Software Systems: Tools and Techniques (IWICSS)*, Minneapolis, MN, May 22, 2007.
14. C. Mattmann and N. Medvidovic. The Grid Lite DREAM: Bringing the Grid to your Pocket. In *Proceedings of Monterey Workshop 2006 - Best Papers*, Springer Lecture Notes on Computer Science (LNCS) 4322, pp. 70-87, 2007.
15. J. Bhuta, C. Mattmann, N. Medvidovic, and B. Boehm. A Framework for the Assessment and Selection of Software Components and Connectors in COTS-based Architectures. In *Proceedings of the 6th IEEE/IFIP Working Conference on Software Architecture (WICSA2007)*, pg. 6, Mumbai, India, January 6th-9th, 2007.
16. D. Crichton, S. Kelly, C. Mattmann, Q. Xiao, J. S. Hughes, J. Oh, M. Thornquist, D. Johnsey, S. Srivastava, L. Esserman, B. Bigbee. A Distributed Information Services Architecture to Support Biomarker Discovery in Early Detection of Cancer. In *Proceedings of the 2nd IEEE International Conference on e-Science and Grid Computing*, pp. 44, Amsterdam, the Netherlands, December 4th- 6th, 2006.
17. C. Mattmann. Software Connectors for Highly Distributed and Voluminous Data-intensive Systems. In *Proceedings of the Doctoral Symposium at the 21st IEEE/ACM International Conference on Automated Software Engineering (ASE06)*, pp. 331-334, Tokyo, Japan, September 18-22, 2006.

18. J. S. Hughes, D. Crichton, P. Ramirez and C. Mattmann. Data Model Management for Space Information Systems. In *Proceedings of the 9th International Conference on Space Operations (SpaceOps2006)*, AIAA Press, Rome, Italy, June 2006.
19. C. Mattmann, D. Crichton, J. S. Hughes, P. Ramirez and D. Berrios. A Reference Architecture for Space Information Management. In *Proceedings of the 9th International Conference on Space Operations (SpaceOps2006)*, AIAA Press, Rome, Italy, June 2006.
20. C. Mattmann, D. Crichton, N. Medvidovic and S. Hughes. A Software Architecture-Based Framework for Highly Distributed and Data Intensive Scientific Applications. In *Proceedings of the 28th International Conference on Software Engineering (ICSE06), Software Engineering Achievements Track*, pp. 721-730, Shanghai, China, May 20th-28th, 2006.
21. C. Mattmann, D. Crichton, J. S. Hughes, S. Kelly, S. Hardman, R. Joyner and P. Ramirez. A Classification and Evaluation of Data Movement Technologies for the Delivery of Highly Voluminous Scientific Data Products. In *Proceedings of the NASA/IEEE Conference on Mass Storage Systems and Technologies (MSST2006)*, pp. 131-135, College Park, Maryland, May 15-18, 2006.
22. N. Medvidovic and C. Mattmann. The GridLite DREAM: Bringing the Grid to Your Pocket. In *Proceedings of the Monterey Workshop on Networked Systems*, Irvine, CA, September, 2005. Invited to submit an extended and revised version of this paper to a special issue of Springer Lecture Notes on Computer Science in May 2006.
23. J. Steven Hughes, D. Crichton, S. Kelly and C. Mattmann. The Semantic Planetary Data System. In *Proceedings of the 3rd Symposium on Ensuring Long-term Preservation and Adding Value to Scientific and Technical Data (PV-2005)*, The Royal Society, Edinburgh, UK, November 21-23, 2005.
24. S. Banerjee, C. Mattmann, N. Medvidovic, and L. Golubchik. Leveraging Architectural Models to Inject Trust into Software Systems. In *Proceedings of the ICSE 2005 Workshop on Software Engineering for Secure Systems – Building Trustworthy Applications (SESS05)*, St. Louis, Missouri, May 15th-16th, 2005.
25. C. Mattmann, N. Medvidovic, P. Ramirez and V. Jakobac. Unlocking the Grid. In *Proceedings of the 8th ACM SIGSOFT International Symposium on Component-based Software Engineering (CBSE8)*, pp. 322-336. LNCS 3489, G. Heineman (Eds), Springer Verlag, St. Louis, Missouri, May 14th-15th, 2005.
26. C. Mattmann, S. Malek, N. Beckman, M. Mikic-Rakic, N. Medvidovic and D. Crichton. GLIDE: A Grid-based, Lightweight, Infrastructure for Data-intensive Environments. In *Proceedings of the European Grid Conference (EGC2005)*, pp. 68-77. LNCS 3470, P. M. A. Sloot, A. G. Hoekstra, T. Priol, A. Reinfield, M. Bubak (Eds), Springer Verlag, Amsterdam, The Netherlands, February 14-16, 2005.
27. P. Ramirez and C. Mattmann. ACE: Improving Search Engines via Automatic Concept Extraction. In *Proceedings of the 2004 IEEE International Conference on Information Reuse and Integration (IEEE IRI-2004)*, pp. 229-234. Las Vegas, NV, November 8th-10th, 2004.
28. R. Raskin, M. Pan and C. Mattmann. Enabling Semantic Interoperability for Earth Science Data. *4th Annual NASA Earth Science Technology Conference (ESTC-2004)*. Palo Alto, CA, June 22nd- 24th, 2004. Paper available at:
<http://esto.nasa.gov/conferences/estc2004/papers/a5p1.pdf>
29. J. Steven Hughes, D. Crichton, S. Kelly, C. Mattmann, R. Joyner, J. Wilf and J. Crichton. A Planetary Data System for the 2006 Mars Reconnaissance Orbiter Era and Beyond. In *Proceedings of the 2nd ESA Symposium on Ensuring the Long Term Preservation and Adding Value to Scientific and Technical Data (PV-2004)*. Frascati, Italy, October 5-7, 2004.
30. C. Mattmann, D. Crichton, J.S. Hughes, S. Kelly and P. Ramirez. Software Architecture for Large-scale, Distributed, Data-Intensive Systems. In *Proceedings of the 4th IEEE/IFIP*

Working Conference on Software Architecture (WICSA-4), pp. 255-264. Oslo, Norway, June 12th-15th, 2004.

31. C. Mattmann, P. Ramirez, D. Crichton and J.S. Hughes. Packaging Data Products using Data Grid Middleware for Deep Space Mission Systems. In *Proceedings of the 8th International Conference on Space Operations (Spaceops-2004)*, AIAA Press. Montreal, Canada, May 2004.
32. C. Mattmann, D. Freeborn and D. Crichton. Towards a Distributed Information Architecture for Avionics Data. In *Proceedings of the 2nd IADIS International Conference WWW/Internet*, Vol II, pp. 829-832. Algarve, Portugal, November, 2003.
33. C. Mattmann and B. Shaw. Adding Meta-Architectural Understanding to Resource Aware Software Architectures Requiring Device Synchronization. In *Proceedings of the 2nd IADIS International Conference WWW/Internet*, Vol. II, pp. 1265-1266. Algarve, Portugal, November, 2003.
34. S. Mandutianu, S. Hardman and C. Mattmann. DIRAC: A Framework for Coordination and Cooperation. Poster Session. *ACM/IFIP/USENIX International Middleware Conference*. Rio de Janeiro, Brazil, 2003.

Technical Reports

1. C. Mattmann, D. Freeborn, D. Crichton, J. S. Hughes, P. Ramirez, S. Hardman, D. Woollard, and S. Kelly. Refining and Improving the OODT Catalog and Archive Service via Agile Component Refactoring. NASA New Technology Report (NTR) NPO-44883, 2007.
2. V. Perrone, C. Mattmann, S. Kelly, D. Crichton, A. Finkelstein, and N. Medvidovic. A Reference Framework for Requirements and Architecture in Biomedical Grid Systems. Technical Report, USC-CSE-2007-706. Center for Software Engineering, University of Southern California, March 2007.
3. D. Woollard, C. Mattmann, and N. Medvidovic. Injecting Software Architectural Constraints into Legacy Scientific Applications. Technical Report, USC-CSE-2007-701. Center for Software Engineering, University of Southern California, January 2007.
4. J. Bhuta, C. Mattmann, N. Medvidovic, and B. Boehm. A Framework for the Assessment and Selection of Software Components and Connectors in COTS-based Architectures. Technical Report, USC-CSE-2006-615. Center for Software Engineering, University of Southern California, September 2006.
5. C. Mattmann. Software Connectors for Highly Distributed and Voluminous Data-intensive Systems. Technical Report (Qualifying Exam Report), USC-CSE-2006-600, 2006.
6. C. Mattmann, N. Medvidovic, P. Ramirez and V. Jakobac. Unlocking the Grid. Technical Report, USC-CSE-2004-512. Center for Software Engineering, University of Southern California, December 2004.
7. C. Mattmann, S. Malek, N. Beckman, M. Mikic-Rakic, N. Medvidovic and D. Crichton. GLIDE: A Grid-based, Lightweight, Infrastructure for Data-intensive Environments. Technical Report, USC- CSE-2004-509. Center for Software Engineering, University of Southern California, August 2004.
8. C. Mattmann and P. Ramirez. A Comparison and Evaluation of Architecture Recovery in Data-Intensive Systems using Focus. Technical Report, USC-CSE-2004-507. Center for Software Engineering, University of Southern California, May 2004.
9. C. Mattmann and P. Ramirez. Intelligent Coordinates: A Case Study in Improving Simulated Annealing in the Bin-Packing Domain. Technical Report, USC-03-798. Department of Computer Science, University of Southern California, September 2003.

INTERNATIONAL
STANDARDS

“Information Architecture for Space Data Systems” Consultative Committee on Space Data Systems (CCSDS) Information Architecture Working Group (IA-WG) Currently *Draft Green Book Status*
<http://www.ccsds.org/docu/dscgi/ds.py/Get/File-1609/CCSDSInfoArch-new.pdf>

RESEARCH GRANTS **Awarded**

1. National Aeronautics and Space Administration: IPP Seed Fund
“Facilitating Climate Modeling Research By Integrating NASA and the Earth System Grid”
Duration: FY2009-FY2010
Role: Collaborator
Amount: 750K
PI(s): Dan Crichton, JPL
Dean Williams, LLNL
Collaborator(s):
Yi Chao, JPL
Robert Raskin, JPL
Amy Braverman, JPL
Chris A. Mattmann, JPL
2. National Aeronautics and Space Administration: ROSES ACCESS
“Virtual Oceanographic Data Center”
Duration: FY2007-FY2008
Role: Co-Investigator
Amount: 597K
PI(s): Robert Raskin, JPL
Co-I(s):
Chris A. Mattmann, JPL
Jorge Vasquez, JPL
Edward Armstrong, JPL
3. National Institutes of Health: Task Plan Renewal
“EDRN Cancer Research Informatics Platform”
Duration: FY2005-2008
Role: Key Staff
Amount: 4000K
PI(s): Dan Crichton, Jet Propulsion Laboratory
Status: Funded
4. Jet Propulsion Laboratory - Research and Technology (R&TD) Development Fund: (Co-Investigator)
“Library of Reusable CMSV Tools”
Duration: FY2004-FY2006
Amount: 400K
PI(s): Mark Kordon, Jet Propulsion Laboratory
Co-I(s): Daniel J. Crichton, Jet Propulsion Laboratory
Chris Mattmann, Jet Propulsion Laboratory
Tom Boyce, Jet Propulsion Laboratory
Jayne Dutra, Jet Propulsion Laboratory
Norm Lamarra, Jet Propulsion Laboratory
Young Lee, Jet Propulsion Laboratory
Julia Dunphy, Jet Propulsion Laboratory
Ted Specht, Jet Propulsion Laboratory
Dana Freeborn, Jet Propulsion Laboratory

Pending

1. Jet Propulsion Laboratory - Research and Technology (R&TD) Development Fund: (Co-Investigator)
“The Climate Data Exchange: A Distributed Science Analysis Environment for Climate Research”

Duration: FY2009-FY2011
Amount: 2280K
PI(s): Amy Braverman, Jet Propulsion Laboratory
Co-I(s): Daniel J. Crichton, Jet Propulsion Laboratory
Chris Mattmann, Jet Propulsion Laboratory
Robert Raskin, Jet Propulsion Laboratory
David Woollard, Jet Propulsion Laboratory

FORMAL
PRESENTATIONS

1. *Apache Tika - An extensible, configurable content-analysis framework*. J. Zitting, C. Mattmann. Presented at the ApacheCon US 2007, November 15, 2007, Atlanta, GA, 2007.
2. *A Reference Framework for Requirements and Architecture in Biomedical Grid Systems*. C. Mattmann, V. Perrone, S. Kelly, D. Crichton, A. Finkelstein, N. Medvidovic. Presented at the 2007 IEEE International Conference on Information Integration and Reuse (IRI-2007), August 15th, Las Vegas, NV, 2007.
3. *DISCO: A Framework for Classification and Selection of Software Connectors for Highly Distributed and Voluminous Data-intensive Systems*, C. Mattmann, D. Woollard, N. Medvidovic, T. Johns, R. Mahjourian. Presented at the 2007 UC Irvine ISR Research Forum, June 1, Irvine, CA, 2007.
4. *Software Connector Classification and Selection for Data-intensive Systems*, C. Mattmann, D. Woollard, N. Medvidovic, R. Mahjourian. Presented at the 2nd International Workshop on Incorporating COTS Software into Software Systems: Tools and Techniques (IWICSS), May 22nd, Minneapolis, MN, 2007.
5. *A Framework for the Assessment and Selection of Software Components and Connectors in COTS-based Architectures*, C. Mattmann, J. Bhuta. Presented at the 2nd International Workshop on Incorporating COTS Software into Software Systems: Tools and Techniques (IWICSS), May 22nd, Minneapolis, MN, 2007.
6. *A Framework for the Assessment and Selection of Software Components and Connectors in COTS-based Architectures*, J. Bhuta, C. Mattmann. Presented at the USC CSE Annual Research Review (ARR), February 13th, Los Angeles, CA 2007.
7. *A Distributed Information Services Architecture to Support Biomarker Discovery in Early Detection of Cancer*, D. Crichton, S. Kelly, C. Mattmann, Q. Xiao, J. S. Hughes, J. Oh, M. Thornquist, D. Johnsey, S. Srivastava, L. Esserman, B. Bigbee. Presented at the 2nd IEEE International Conference on e-Science and Grid Computing, December 4th, Amsterdam, the Netherlands, 2006.
8. *A Framework for Selecting Large-scale, Distributed, Data-intensive Software Connectors*. C. Mattmann, N. Medvidovic, and D. Crichton. Presented at the 2006 UC Irvine ISR Research Forum, June 2, Irvine, CA, 2006.
9. *A Software Architecture-based Framework for Highly Distributed and Data Intensive Scientific Applications*. C. Mattmann, D. Crichton, N. Medvidovic, and S. Hughes. Presented at the 28th ACM/ IEEE International Conference on Software Engineering (ICSE) Software Engineering Achievements and Challenges Track. May 24th, Shanghai, China, 2006.
10. *A Classification and Evaluation of Data Movement Technologies for the Delivery of Highly Voluminous Scientific Data Products*. C. Mattmann, S. Kelly, D. Crichton, J. S. Hughes, S. Hardman, P. Ramirez and R. Joyner. Presented at the NASA/IEEE Conference on Mass Storage Systems and Technologies. May 16th, College Park, MD, 2006.
11. *Tera/Petabyte Data Distribution Architectures*. C. Mattmann. Presented at the USC CSE Annual Research Review (ARR), March 14th, Los Angeles, CA 2006.
12. *Software Connectors for Highly Distributed and Voluminous Data-intensive Systems*. C. Mattmann. Qualifying Exam Presentation, University of Southern California, January 20th, Los Angeles, CA, 2006.

13. *The Movement Towards Grid Architectures in Planetary Science*. D. Crichton, J. S. Hughes and C. Mattmann. Presented at the 14th Global Grid Forum (GGF-14), June 26th-29th, Chicago, IL, 2005.
14. *A Light-weight, Event-based, Grid Infrastructure for Data-intensive Environments*. C. Mattmann, N. Medvidovic, D. Crichton, S. Malek, M. Mikic-Rakic, N. Beckman. Presented at the 2005 UC Irvine ISR Research Forum, June 3, Irvine, CA, 2005.
15. *Unlocking the Grid*. C. Mattmann, N. Medvidovic, P. Ramirez and V. Jakobac. Presented at the 8th ACM SIGSOFT Symposium on Component-based Software Engineering (CBSE8), May 15th, St. Louis, MO, 2005.
16. *Leveraging Architectural Models to Inject Trust into Software Systems*. S. Banerjee, C. Mattmann, N. Medvidovic, and L. Golubchik. Presented at the 2005 ICSE Workshop on Software Engineering for Secure Systems (SESS05), May 15th, St. Louis, MO, 2005.
17. *A Grid-based Lightweight Infrastructure for Data-intensive Environments*. C. Mattmann, S. Malek, N. Beckman, M. Mikic-Rakic, N. Medvidovic and D. Crichton. Presented at the USC CSE Annual Research Review (ARR), Los Angeles, CA 2005.
18. *GLIDE: A Grid-based, Lightweight Infrastructure for Data-intensive Environments*. C. Mattmann, S. Malek, N. Beckman, M. Mikic-Rakic, N. Medvidovic and D. Crichton. Presented at the 2005 European Grid Conference, Amsterdam, the Netherlands, February 2005.
19. *ACE: Improving Search Engines via Automatic Concept Extraction*. P. Ramirez and C. Mattmann. Presented at the 5th IEEE Conference on Information Reuse and Integration (IEEE-IRI-2004). Las Vegas, NV, November 2004.
20. *Software Architecture for Large-scale, Distributed, Data-Intensive Systems*. C. Mattmann, D. Crichton, J. S. Hughes, S. Kelly and P. Ramirez. Presented at the 4th IEEE/IFIP Working Conference on Software Architecture (WICSA-4), Oslo, Norway, June 2004.
21. *An Architectural Style for Highly Data-Intensive Systems*. C. Mattmann, D. Crichton and N. Medvidovic. Presented at the 2004 UC Irvine ISR Research Forum, Irvine, CA, June 2004.
22. *Packaging Data Products using Data Grid Middleware for Deep Space Mission Systems*. C. Mattmann, P. Ramirez, D. Crichton and J.S. Hughes. Presented at the 8th International Conference on Space Operations (Spaceops-2004), Montreal, Canada, May 2004.
23. *The Grid and Information Architecture*. C. Mattmann, D. Crichton, J.S. Hughes. Presented at Consultative Committee for Space Data Systems (CCSDS) Information Architecture Working Group, Montreal, Canada, May 2004.
24. *A Roadmap for Tool Support in Space Data System Software Architectures*. C. Mattmann, D. Crichton, J.S. Hughes. Presented at Consultative Committee for Space Data Systems (CCSDS) Information Architecture Working Group, Montreal, Canada, May 2004.
25. *A Software Architecture for Highly Data-Intensive Systems*. C. Mattmann. Presented at the USC CSE Annual Research Review (ARR), Los Angeles, CA 2004
26. *A Data Grid Framework for Managing Planetary Science Data*. D. Crichton, J.S. Hughes, C. Mattmann. Presented to the Center for Applied Scientific Computing (CASC) at Lawrence Livermore National Laboratory (LLNL), Livermore, California, December 2003.
27. *Towards a Distributed Information Architecture for Avionics Data*. C. Mattmann, D. Freeborn, and D. Crichton. Presented at the 2nd IADIS International Conference WWW/Internet, Algarve, Portugal, November 2003
28. *Tool Support for Modeling Space Data System Software Architectures*, C. Mattmann, D. Crichton, and J.S. Hughes. Presented at Consultative Committee for Space Data Systems (CCSDS) Information Architecture BOF (Birds of a Feather), Columbia, Maryland, October 2003.
29. *A Distributed Data Architecture for Mars Odyssey Data Distribution*, D. Crichton, J.S. Hughes, C. Mattmann. Presented to Center for Grid Technologies, Information Sciences Institute, Marina Del Rey, CA August 2003.

MENTORING

Southern California Bioinformatics Summer Institute (So Cal BSI)

Ronny Chan

Kim Ngo

Jet Propulsion Laboratory Summer Students

Co-advised with: Dr. Tina Xiao, JPL, Roshanak Roshandel, JPL, Paul Ramirez, JPL, Dan Crichton, JPL

Sponsored by: National Science Foundation and the National Institutes of Health

PROFESSIONAL SERVICE

Program Committee Membership

1. Program Committee Member, 34th Euromicro Conference, Special Session on Software Architecture for Pervasive Systems (SAPS), Parma, Italy, September 2008.
2. Program Committee Member, 2007 ISR Graduate Student Research Symposium, Irvine, CA, June 2007.

Conference/Workshop Organization

1. Webmaster, 2005 Working IFIP/IEEE Conference on Software Architecture (WICSA)

Referee and Reviewer Service

1. External Reviewer, 23rd IEEE/ACM International Conference on Automated Software Engineering (ASE), 2008.
2. Reviewer, 34th Euromicro Special Session on Software Architecture for Pervasive Systems (SAPS), 2008.
3. Reviewer, Wiley Encyclopedia of Computer Science and Engineering, 2008.
4. External Reviewer, Journal of Systems and Software Special Section on Software Architecture, 2008.
5. Reviewer, ACM Computing Reviews, 2007, 2008
6. External Reviewer, 7th IFIP/IEEE Working Conference on Software Architecture, 2007
7. Reviewer, IBM Systems Journal, 2007.
8. Reviewer, 2007 ISR Graduate Student Research Symposium, Irvine, CA, June 2007.
9. External Reviewer, 3rd Intl' Conference on the Quality of Software-Architectures, 2007.
10. External Reviewer, 10th Intl' Symposium on Component-based Software Engineering, 2007.
11. External Reviewer, 1st IEEE Intl' Conf. on Self-Adaptive and Self-Organizing Systems, 2007.
12. External Reviewer, ICSE07 SHARK ADI Workshop, 2007.
13. External Reviewer, Journal of Systems and Software Special Section on Software Architecture, 2006.
14. External Reviewer, 6th Working IFIP/IEEE Conference on Software Architecture, 2006 .
15. External Reviewer, 9th Intl Symposium on Component-based Software Engineering, 2006.
16. External Reviewer, 3rd Intl Working Conference on Component Deployment, 2005 .
17. External Reviewer, 5th Intl Workshop on Software Engineering and Middleware, 2005.
18. External Reviewer, 9th Intl Software Product Line Conference, 2005.
19. External Reviewer, 8th Intl Symposium on Component-based Software Engineering, 2005.
20. Reviewer, IEEE Software, 2004, 2005.
21. External Reviewer, FSE-12 Workshop On Self-managing Systems (WOSS), 2004.

22. External Reviewer, UML04 Workshop on Software Architecture Description and UML, 2004.
23. External Reviewer, Workshop on Architecting Dependable Systems, 2004.
24. Reviewer, Journal of Autonomous Agents and Multi-agent Systems 2003 .

Other

1. Proceedings Contributor to DBLP bibliography server (WICSA-4, ICWI2003, IEEE-IRI 2004)

ADVISORY

Completed

1. National Institutes of Health (NIH), National Institute's of Allergies and Infectious Disease (NIAID) Adjuvant Development Program Proposal Review Panel, 2008.
2. National Institutes of Health (NIH), National Institute's of Allergies and Infectious Disease (NIAID) DMID Regulatory Affairs Support Proposal Review Panel, 2008.

PROFESSIONAL ASSOCIATIONS

ACM Special Interest Group on Software Engineering (SIGSOFT)
IEEE Computer Society, Member Status
Consultative Committee on Space Data Systems (CCSDS) Participant, JPL
Apache Software Foundation (ASF)

COMPUTER SKILLS

- Languages: Java, C/C++, Perl, Python, SQL, XML, HTML, JavaScript, VBScript, ASP, JSP, PHP
- Applications: L^AT_EX, common Windows database, spreadsheet, and presentation software, Adobe Photoshop, Adobe Framemaker, Subversion, CVS, ViewVC, JIRA, Confluence, Maven, Ant, Junit
- Operating Systems: Windows, Solaris, Unix (particular experience with FreeBSD), Linux (experience with RedHat).

REFERENCES

Available upon Request

CITIZENSHIP

United States Citizen