Curriculum Vitae
Craig Alexander Lee

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Education

Ph.D., December 1988, Computer Science, University of California, Irvine. Thesis: *Logic, Parallelism and Semantic Networks: The Binary Predicate Execution Model.*

M.S., June 1982, Computer Science, Syracuse University, Syracuse, New York.

B.A., June 1975, Psychology, Reed College, Portland, Oregon. Bachelor's Thesis: *Development and Use of a Neural Model for the Computer, or I tried Aplysia.*

Publications

Lee, C., R. Bohn, M. Michel, *The IEEE 2302-2021 Standard on Intercloud Interoperability and Federation*, IEEE Cloud Continuum, V2n1, 2022, https://ieeecs-media.computer.org/media/marketing/cloud-continuum/cc-vo2-no1.pdf.

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Lee, C., Zhiyi Zhang, Yukai Tu, Alex Afanasyev and Lixia Zhang, Supporting Virtual Organizations Using Attribute-Based Encryption in Named Data Networking, invited paper, *4th IEEE Conference on Collaboration and Internet Computing*, pp. 188–196, October 19, 2018.

Lee, C., Marcio Assis, Luiz F. Bittencourt, Stefano Nativi and Rafael Tolosana-Calasanz, Big Iron, Big Data and Big Identity, Chapter in *New Frontiers in High Performance Computing and Big Data*, G. Fox, V. Getov, L. Grandinetti, G. Joubert, T. Sterling, eds., *Advances in Parallel Computing*, Vol. 30, pp. 139-160, IOS Press, Nov. 2017.

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Lee, C., Cloud Federation Management and Beyond: Requirements, Relevant Standards, and Gaps, *IEEE Cloud Computing*, v3n1, pp. 42–49, Jan-Feb 2016, doi:10.1109/ MCC.2016.15.

Assis, M. Luiz F. Bittencourt, Rafael Tolosana-Calasanz, and Craig Lee, Cloud Federations: requirements, taxonomy, and architectures, chapter in *Developing Interoperable and Federated Cloud Architecture*, Kecskemeti, Kertesz, Nemeth, eds., IGI-Global, pp. 1–42, April 2016, DOI10.4018/978-1-5225-0153-4.ch001.

Lee, C., "Cloudy GMSEC and Cloud Service Level Agreements", Aerospace TOR-2015-00853, January 2015.

Lee, C., N. Desai and A. Brethorst, A Keystone-based Virtual Organization Management System, *6th IEEE CloudCom*, pp. 727-730, December 15-18, 2014.

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Lee, C. A. and A. Sill, A Design Space for Dynamic Service Level Agreements in OpenStack, Invited article, expanded journal version, *Journal of Cloud Computing: Advances, Systems and Applications* (Springer), 3:17, (7 November 2014)

Chadwick, D.W., K. Siu, C. Lee, Y. Fouillat, D. Germonville, Adding Federated Identity Management to OpenStack, *Journal of Grid Computing*, Volume 12, Issue 1, pp. 3–27, March 2014. Also published on-line: http://rd.springer.com/article/10.1007/s10723-013-9283-2.

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Lee, C., Gasster, S., Netcentric Proxies for On-Orbit Sensors, *CrossTalk: The Journal of Defense Software Engineering*, pp. 4-7, Nov/Dec, 2011.

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Lee, C., (ed.), The Best Application Papers from the Third International Workshop on Grid Computing. *International Journal of High-Performance Computing Applications*, Vol. 17, no. 4, November 2003.

Bal, H., Löhr, K.-P., Reinefeld, A., and Lee, C. (eds.) The Best Papers from CCGrid 2002. *Future Generation Computing Systems*, Vol. 9, no. 4, pp. 503–596, 2003.

Lee, C., Coe, E., Michel, B., Solis, I., Stepanek, J., Clark, J.M., Davis, B., Using Topology-Aware Communication Services in Grid Environments. *Workshop on Grids and Advanced Networks, International Symposium on Cluster Computing and the Grid*, pp. 534–541, Tokyo, Japan, May 12, 2003.

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Lee, C. and Talia, D., Grid Programming Models: Current Tools, Issues and Directions, chapter in *Grid Computing: Making the Global Infrastructure a Reality*, (Berman, Fox, Hey, eds.), pp. 555-578, Wiley, March, 2003.

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Lee, C., DeMatteis, C., Stepanek, J., Wang, J. Cluster Performance and the Implications for Distributed, Heterogeneous Grid Performance. *9th IEEE Heterogeneous Computing Workshop*, pp. 253–261, May 1, 2000.

Lee, C., Wolski, R., Foster, I., Kesselman, C., Stepanek, J. A Network Performance Tool for Grid Computations. *Supercomputing '99*, November 13-19, 1999.

Foster, I., Kesselman, C., Lee, C., Lindell, B., Nahrstedt, K., Roy, A. A Distributed Resource Management Architecture that Supports Advance Reservations and Co-Allocation. *7th IEEE/IFIP International Workshop on Quality of Service*, pp. 27—36, June 1-4, 1999.

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Stelling, P., Foster, I., Kesselman, C., Lee, C., von Laszewski, G. A Fault Detection Service for Wide Area Distributed Computations. *IEEE 7th International Symposium on High Performance Distributed Computing*, Chicago, Illinois, pp. 268–278, (July 28-31, 1998).

Lee, C.A., Stepanek, J., Michel, B.S., Kesselman, C., Lindell, R., Hwang, S., Bannister, J., Foster, I., Roy, A. Qualis: the Quality of Service Component for the Globus Metacomputing System. *IEEE/IFIP 6th International Workshop on Quality of Service*, Napa, CA, pp. 140–142, (May 18-20, 1998).

Betser, J., Lee, C.A., Bannister, J. and Dugan, S. High Speed Networking Applications Over ATM. *Gigabit Networking Workshop/INFOCOM '97*, Kobe, Japan, (April 7, 1997).

Lee, C.A. Practical Metacomputing in CC++. *NASA Computational Aerosciences Workshop*, NASA Ames Research Center, pp. 139–144, (August 14, 1996).

Lee, C.A., Kesselman, C.F., Schwab, S. Near-real-time Satellite Image Processing: Metacomputing in CC++. *Computer Graphics and Applications*, pp. 79–84, (July, 1996).

Lee, Schwab, Loomis, Kesselman, and Foster. Near-real-time Detection and Visualization of Clouds. *Virtual Environments and Distributed Computing at SC'95: GII Testbed and HPC Challenge Applications on the I-WAY*, pp. 16, (December, 1995). Also available at http://www.ncsa.uiuc.edu/General/Training/SC95/GII.HPCC.html.

Steinman, J.S., Lee, C.A., Wilson, L.F., and Nicol, D.M. Global Virtual Time and Distributed Synchronization, *IEEE 9th Workshop on Parallel and Distributed Simulation*, Lake Placid, NY, pp. 139–148, (June 14-16, 1995).

Lee, C.A. Architecture-Independent Parallel Computing, *NASA Computational Aerosciences Workshop*, NASA Ames Research Center, pp. 56–57, (March 7-9, 1995).

Campbell, M., Little, M., Grinberg, J., and Lee C. Software Development Environment for the 3-D Computer and Applications Examples, Government Microcircuit Applications Conference (GoMAC), Las Vegas, NV, pp. 549–552, (November 9-12, 1992).

Lee, C.A. and Bic, L. The Effect of Structure on the Mapping Problem Using Simulated Annealing. *13th World Congress on Computation and Applied Mathematics (IMACS '91)*, Dublin, pp. 821–823, (July 22-26, 1991).

Lee, C.A. Gauge - Portable Parallel Performance Visualization Tools. *Software Technology for High Performance Architectures Workshop*, Northeast Parallel Architectures Center, Syracuse, NY, pp. 241, (June 12-14, 1991).

Lee, C.A. and Bic, L. Load Balancing Using Semi-Private Memory. *Tenth Annual Int'l. Phoenix Conf. on Computers and Communication*, Scottsdale, AZ, pp. 167–173, (March 27-30, 1991).

Lee, C.A. Barrier Synchronization over Multistage Interconnection Networks. *2nd IEEE Symp. on Parallel and Dist. Processing*, Dallas, pp. 130–133, (Dec. 9-13, 1990).

Lee, C.A. and Bic, L. Performance of a Decentralized Knowledge Base System. *The 9th International Conference on Distributed Computing Systems*, pp. 343–352, (June 5-9, 1989).

Lee, C.A. and Bic, L. Comparing Quenching and Slow Simulated Annealing on the Mapping Problem. *Third Annual Parallel Processing Symposium*, (March 29-31, 1989).

Lee, C.A. and Bic, L. On the Mapping Problem Using Simulated Annealing. *1989 IEEE Int'l. Phoenix Conference on Computers and Communication*, (March 22-24, 1989).

Lee, C.A. and Bic, L. A Parallel Logic Model for Real-Time Knowledge-Base Systems. *First Australian Knowledge Engineering Congress*, (March 13-14, 1989).

Bic, L. and Lee, C. A Data-Driven Model for a Subset of Logic Programming. *ACM Trans. on Programming Languages and Systems*, V9n4 (October 1987) pp. 618–645.

Reviewing and Editing Activities

International Journal of Cloud Computing, Inderscience Press.
  • Charter Member of the Editorial Board, March 2010 to January 2022

Future Generation Computing Systems: The International Journal of Grid Computing: Theory, Methods & Applications, Elsevier Press.
  • Associate Editor, July 2008 to 2021
  • Member of the Editorial Board, April 2004 to July 2008

Reviewing for:
  • *IEEE Computer*
  • *Parallel and Distributed Technology*
  • *Cluster Computing*
  • *Future Generation Computing Systems*
  • *International Journal of High Performance Computing Applications*
  • *International Journal of Grid Computing*
  • *Journal of Parallel and Distributed Computing*
  • *Wiley* book proposals
  • various other journals

Chairs & Committees

DOE Review, Dynamic Distributed Resource Management program, Washington DC, August 4, 2015.

Supercomputing 2015 Program Committee, Austin Texas, June 22-23, 2015.

Organizer, Secure Consumerization: the Genuine Trustworthiness Revolution session at the GEOSS Science and Technology Workshop, Norfolk VA, March 24-26, 2015.

Cloud Roadmap Editorial Board member, EU SIENA Project, http://www.sienainitiative.eu, 2010-2012.

Advisory Board Member, EU mOSAIC Project, http://mosaic-cloud.eu, 2010-2013.

Judge, Fourth IEEE International Scalable Computing Challenge (SCALE 2011), (www.ics.uci.edu/ ccgrid11/SCALE Challenge.html), at CCGrid, May 26, 2011.

Judge, Third IEEE International Scalable Computing Challenge (SCALE 2010), (www.manjrasoft.com/ccgrid2010/scale2010.html), at CCGrid, May 19, 2010.

Judge, Second IEEE International Scalable Computing Challenge (SCALE 2009), (grid.sjtu.edu.cn/ccgrid2009/Scale2009.pdf), at CCGrid, May 20, 2009.

Selection Committee Member, Second IEEE Medal for Excellence in Scalable Computing, (www.ieeetcsc.org/awards/ieee-medal.html), 2009.

Selection Committee Member, First IEEE Medal for Excellence in Scalable Computing, (www.ieeetcsc.org/awards/ieee-medal.html), 2008.

Advisory Board Member, IEEE Technical Committee on Scalable Computing (www.ieeetcsc.org/tcsc-advisory-board.html), Nov. 2007 – Nov. 2012.

Program Chair, *15th Mardi Gras Conference* hosted by the Center for Computation and Technology at Louisiana State University, Baton Rouge, Jan. 29-Feb. 2, 2008.

Thesis Defense committee, Maria Cecilia Lorga Gomes *Pattern Operators in Grid Environments*, Universidade Nova de Lisboa, Lisbon, Portugal, November 30, 2007.

President, Open Grid Forum, October 2007 to October 2010.

Steering Committee Chair, Program Committee Member, IEEE/ACM International Conference on Grid Computing (Grid 2006), Barcelona, Spain, September 28-29, 2006. (This conference was formerly the Grid Workshop hosted by Supercomputing 'XY from 2001 to 2005.)

Area Director, Industrial Applications, Open Grid Forum, October 2006 to October 2007.

Community Track Program Chair, GGF-18, Washington, D.C., September 11-14, 2006.

External Evaluator, NASA Earth Science Technology Office, Advanced Information Science and Technology projects, third year review, May-September, 2006.

Panelist, DOE SciDAC-2 Program Reviews, Washington, D.C., April 29, 2006.

Steering Committee Chair, Program Committee Member, Grid 2005, November 13-14, 2005.

External Evaluator, NASA Earth Science Technology Office, Advanced Information Science and Technology projects, second year review, May-September, 2005.

Topic 6 (Grid and Cluster Computing) Global-chair, Euro-Par 2005, Lisbon, Portugal, August 31-September 3, 2005.

Workshops Chair, CCGrid 2005, Cardiff, Wales, May 9-12, 2005.

Technical Program Committee Member, Applications Track, IPDPS, April 4-8, 2005.

Panelist for National Science Foundation, Computer Systems Research program, Washington, D.C., March 28-29, 2005.

Panelist for National Science Foundation, Computer Systems Research program, Washington, D.C., March 7-8, 2005.

Best Poster Committee Judge, Supercomputing 2004, November 9, 2004.

Program Committee Member, 17th International Conference on Parallel and Distributed Computing Systems (PDCS 2004), September 15-17, 2004.

Topic 6 (Grid and Cluster Computing) vice-chair, Euro-Par 2004, Pisa, Italy, August 31-September 3, 2004.

External Evaluator, NASA Earth Science Technology Office, Advanced Information Science and Technology projects, first year review, May-September, 2004.

Workshops Chair, CCGrid 2004, Chicago, Illinois, April 19-22, 2004.

Invited Evaluator, INRIA Theme 1A, Architectures and Systems, Jouy-en-Josas, France, March 18-19, 2004.

General Chair, Grid 2003, Phoenix, Arizona, November 17, 2003.

Area Co-Director, Applications, Programming Models and Environments (APME) Area, Global Grid Forum, October 2003 to October 2006.

Program Committee Member, Workshop on Adaptive Grid Middleware, held in conjunction with 12th International Conference on Parallel Architectures and Compiler Techniques, September 27, 2003.

Technical Investment Committee Member, The Aerospace Corporation, for Internal Research & Development projects in the Information Sciences, $1.2M budget for FY04, June 18-20, 2003.

Program Committee Member, CCGrid 2003, Tokyo, Japan, May 12-15, 2003.

Co-Chair, Grids and Advanced Networks Workshop (with Dr. Laurent Lefevre), co-located with CCGrid 2003, Tokyo, Japan, May 12, 2003.

Co-Chair, GridRPC Working Group, Global Grid Forum, April 2003 to October 2004.

General Chair, 12th International Heterogeneous Computing Workshop (HCW '03, co-located with IPDPS), Nice, France, April 22, 2003.

Program Committee Member, 8th International Workshop on High-Level Parallel Programming Models and Supportive Environments (HIPS 2003, co-located with IPDPS), Nice, France, April 22, 2003.

Panelist for National Science Foundation, Information Technology Research program, Washington, D.C., March 20-21, 2003.

General Chair, Grid 2002, Baltimore, Maryland, November 18, 2002.

Reviewer, NASA Earth Science Technology Office, Advanced Information Science and Technology proposals, November, 2002.

Program Committee Member, 4nd International Workshop on Active Middleware Services, Edinburgh, Scotland, July 23, 2002.

Program Chair, 11th International Heterogeneous Computing Workshop (HCW '02, co-located with IPDPS), Fort Lauderdale, Florida, April 15, 2002.

Program Committee Member, 7th International Workshop on High-Level Parallel Programming Models and Supportive Environments (HIPS 2002, co-located with IPDPS), Fort Lauderdale, Florida, April 15, 2002.

Panelist for National Science Foundation, Information Technology Research program, Washington, D.C., Feb. 12-13, 2002.

Workshop/Program Chair, 2nd International IEEE Workshop on Grid Computing (Grid 2001, co-located with Supercomputing 2001), Denver, Colorado, November 12, 2001.

Program Chair, 3nd International Workshop on Active Middleware Services, San Francisco, August 6, 2001.

Panelist for National Science Foundation, Information Technology Research program, Washington, D.C., June 7-8, 2001.

Steering Committee member, Best Paper Awards Committee chair, and Program Committee member for IEEE International Conference on Cluster Computing and the Grid (CCGrid 2001), Brisbane, Australia, May 16-18, 2001.

NSF Committee of Visitors member, Washington, D.C., May 1-2, 2001.

Program Committee member for the 10th IEEE Heterogeneous Computing Workshop, San Francisco, April 23-27, 2001.

Program Committee member for Grid 2000: International Workshop on Grid Computing, Bangalore, India, December 17-20, 2000.

Program Committee member for the 2nd Workshop on Active Middleware Services, Pittsburgh, August 1, 2000.

Program Committee member for the 9th IEEE Heterogeneous Computing Workshop, Cancun, Mexico, May 1, 2000.

Panelist for National Science Foundation, Information Technology Research program, February 7-8, 2000.

Co-chair of the Advanced Programming Models Working Group for the Grid Forum, *www.gridforum.org*, October 1999 to October 2003.

Tutorials Chair, Eighth International IEEE Symposium on High Performance Distributed Computing (HPDC-8), August 3-6, 1999.

Chaired the Compiling Practices session at the IFIP WG 10.3 Conference on Architectures and Compilation Techniques for Fine and Medium Grain Parallelism in Orlando, Florida, January 1993.

Chaired a session of the Rome Lab Workshop on Virtual Machine Concepts at Griffiss AFB on October 4-5, 1993.

Participation in Grants and Contracts

NIST FFO proposal, title and collaborators, submission date

NCOIC Ebola proposal

Geospatial Community Cloud Concept Demonstration , sponsored by the National Geospatial-Intelligence Agency through the Network-Centric Operations Industry Consortium. Funded $95,000, November 2012 to September 2013.

Exanomics: Optimizing Automatic Control at the Exascale, DARPA Omnipresent High Performance Computing program, a collaborative proposal with the Jet Propulsion Laboratory. Submitted August 5, 2010.

ACUMEN: Accurate Characterization of UHPC-Systems via Metrics, Environments, and Novelty, DARPA Ubiquitous High Performance Computing program, a collaborative proposal with the Jet Propulsion Laboratory. Submitted April 15, 2010.

Open Geospatial Interoperability Networks (OGIN), NSF Community-Based Interoperability Networks program, a collaborative proposal with Texas A&M, George Mason University, and the Open Geospatial Consortium Interoperability Institute. Submitted August 23, 2007.

MetaSmart, NSF Software Development for Cyberinfrastructure program, a collaborative proposal with George Mason University, UCAR/Unidata. Submitted January 22, 2007.

InterGridSolve: A Virtualized, General Purpose, and Interoperable Grid Computing Environment for Computational Science, NSF Computer Science Research program, a collaborative proposal with the University of Tennessee, Knoxville, and the University of Chicago. Submitted January 17, 2007.

A Remote Sensing Cyber-Observatory for Science and Crisis Management, NSF Cyberinfrastructure for Environmental Observatories program, a collaborative proposal with Indiana University, UC Davis, and NASA Jet Propulsion Laboratory. Submitted January 25, 2006.

TeraGridSolve: General Scientific Computing Environments for the TeraGrid, NSF Computer Systems Research program, a collaborative proposal with the University of Tennessee, Knoxville, and Argonne National Lab/University of Chicago. Funded $150k, August 2006 to August 2008.

GridTorrent: an Intelligent DDDAS Framework, NSF Dynamic, Data-Driven Application Systems Program, collaborative proposal with Indiana University, University of Southern California, the Jet Propulsion Laboratory and Cardiff University. Submitted June, 2005.

Dynamic Data and Service Discovery for Grid Applications, NSF Information Technology Research Program, collaborative proposal with Indiana University and the University of Tennessee, Knoxville, submitted February, 2004.

Active Middleware Grids: A Collaboration between The Aerospace Corporation and INRIA/Lyon, NSF OISE-0334238 (travel support), $18k, January 2004 to December 2006.

Autonomic Computational Science and Engineering on the Grid, NSF Information Technology Research program (Large), submitted March, 2003.

Ad Hoc Grids - Communication and Computing in a Power-Constrained Environment, NSF Information Technology Research program (Medium), submitted February, 2003.

The Grid Services Management Architecture, NASA STTR proposal, submitted, August, 2002.

Mesh Generation and Optimistic Grid Computation, NSF Next Generation Software program, $150k, 10/2002 to 9/2005.

Support for the Active Middleware Services Workshop and the International Workshop on Grid Computing, NSF award for conference administration and publication, $20k, 2002.

Scalable Weather Research and Forecast (WRF) Model Development, DOD Modernization Program, Common High Performance Computing Software Support Initiative (CHSSI), 2/2000 to 9/2002.

Active Networks, DARPA subcontract through USC, $1.2M, 10/1999 to 9/2002.

Evaluation of Multithreaded Architectures for Defense Applications, DARPA BAA #97-03, DoD Application Partner (for Ensemble Forecasting) in SDSC/Tera proposal .

Guarenteed Quality of Service for Metacomputations, DARPA BAA #96-07, 10/96 to 9/99.

A Platform for Constructing Parallel and Distributed Computations in Large-Scale Internetworked Environments, DARPA BAA #94-07, 10/96 to 9/99.

Talks, Panels & Seminars

Lee, C., K. Yazdi, J. Hynds, and D. Ihrie, "Zero Trust Federations", Panel and demo at Internet2 TechEx, Denver CO, Dec. 7, 2022, https://internet2.edu/2022-technology-exchange/2022-program/abstracts/#zero.

Lee, C. K. Yazdi, "A Prototype of the NIST/IEEE Federation Hosting Service", Demo at the Carahsoft booth, Supercomputing 2022, Dallas TX, Nov. 15-17, 2022.

Lee, C., "Cloud Federation as an Evolutionary Path from Grid Computing", Intl. Adv. Research Workshop on High Performance Computing, Federation session organizer and chair, Cetraro, Italy, July 5, 2018.

Lee, C., "The Cloud Federation Session: Introduction, the Federation Management Design Space, the Current Federation Landscape, and KeyVOMS", Intl. Adv. Research Workshop on High Performance Computing, Cetraro, Italy, June 29, 2016.

Lee, C., Reprise presentation of "A Keystone-based General Federation Agent" at the kick-off meeting of the OpenStack Massively Distributed Cloud Working Group, OpenStack "Newton" Design Summit, Austin TX, April 16, 2016.

Lee, C., "Virtual Organizations: A User-facing Abstraction for Managing Federation, Trust and Collaboration on a Global Scale", IEEE/NSF/Internet2 Workshop on End-to-End Security and Trust in the Internet of Things, Washington DC, Feb 4 2016.

Lee, C., "Update: Bridging Silos: Federation Management", DoD OCIO/DISA CTO TEM, Arlington VA, Jan 29, 2016.

Lee, C., "Cloud Computing for Satellite Ground Systems", Global MilSatCom, London, UK, Nov 2, 2015.

Lee, C., "Turn OpenStack into the Global Intercloud – Now!", OpenStack Design Summit, Tokyo, Oct 29, 2015.

Lee, C., "(Cloud) Federation Management", NIST Cloud Computing Workshop and Forum VIII, Gaithersburg, Maryland, July 9, 2015.

Lee, C., "Managing Disaster Response through On-Demand Resource Federation", GEOSS Science and Technology Workshop, March 24-26, 2015, Norfolk VA.

Lee, C., "Bridging Silos: Federation Management", DoD OCIO/DISA CTO TEM, Arlington VA, March 20, 2015.

Lee, C., "A Tutorial on Cloud Computing, Cloud-based Ground Systems and Their Outstanding Challenges", NRO tutorial, March 18, 2015.

Bannister, et al., "The SMC Enterprise Ground Architecture Cloud Studies', GSAW workshop session and presentation, March 4, 2015.

Lee, C., "Federation Management Using Keystone", OpenStack Design Summit, Paris, Nov 5, 2014.

Lee, C. A. and D. W. Chadwick. The Virtual Organization Concept for Authorization Management in Federated Clouds, *The OpenStack Design Summit*, Hong Kong, Nov. 8. 2013.

Lee, C. A., et al., The NGA/NCOIC GeoInt Community Cloud project. Final presentation, Tysons Corner, VA, Sept. 12, 2013.

Lee, C. A., Participant, Kachina Summer Workshop on Cybersecurity, Sandia National Lab, Albuquerque, NM, June 17-July 26, 2013.

Autonomic Cloud Workflows and Cloud Federation, C. A. lee, Ground Systems Architecture Workshop, March 18, 2013.

Lee, C. A., NGA/NCOIC GeoINT Community Cloud OpenStack Federated Authorization, *OGF-37*, University of Virginia, Charlottesville, March 12, 2013.

Cloud-Based Disaster Response, Greer, M. and C. A. Lee, Invited presentation, NIST Joint Cloud and Big Data Workshop, Gaithersburg, MD, January 15, 2013. http://collaborate.nist.gov/twiki-cloud-computing/bin/view/CloudComputing/ForumCCBGIAgenda

Cloud Federation – Establishing Trust, Invited presentation, 5th NIST Cloud Computing Forum, DOC, Washington DC, June 5, 2012.

The OGF Cloud Portfolio, OMG Cloud Consumers Standards Council, Reston VA, March 19, 2012.

A Cloud-Based Reference Model and Deployment Roadmap for Satellite Ground Systems, Ground Systems Architecture Workshop, February 29, 2012.

Identity, Federation, and Governance or Managing Leaps of Imagination!, Invited Speaker, NIST Cloud Computing Forum and Workshop IV, Gaithersburg MD, November 4, 2011.

Federated Resource Management, aka, Federated Clouds, invited speaker, The President's National Security Telecommunications Advisory Committee (NSTAC), Arlington VA, August 4, 2011.

Invited Speaker, Opal's Business of Cloud Computing, San Diego, June 2011.

iCORE Demo with N. Desai, GEOINT, New Orleans, Nov. 2, 2010.

Scientific Cloud Computing – in a larger context, Invited speaker, International Conference on Computing in High Energy and Nuclear Physics (CHEP), Academia Sinica, Taipei, Taiwan, 18-22 October 2010.

IGTF meeting in TX by video, invited panelist, Oct. 4, 2010.

GeoTEM at MITRE, Sept. 24, 2010.

NCOIC, Sept 21, 2010.

Cloud Deployment Trajectories (and What We Can Do About It), Invited speaker, Global Inter-Cloud Technology Forum (GICTF) Annual Meeting, Tokyo, Japan, June 28, 2010.

e-Infrastructure Evolution, Accessibility, and Societal Impacts, 4th BELIEF International Symposium: Future trends and e-Infrastructures application: towards sustainable development; invited keynote, Escola Politécnica of the Universidade de São Paulo, July 16-17, 2009, São Paulo, Brazil.

OMG, July 13, 2009.

TeraGrid meeting, Arlington, VA, June 24 2009.

OGC in Boston, MA, June 24, 2009.

SATCCI, March 23, 2009.

Open Group panel, Feb 3, 2009.

NCOIC in Costa Mesa, December 2008.

Common Practices for Distributed Decision Systems, 1st Workshop on e-Infrastructure for Civil Protections, Invited Speaker, Rome, December 5, 2008.

GEOSS Arch mtg., invited talk, Valencia, Spain, Dec. 3, 2008.

Evolutionary Pressures on Grid Technology and Markets GridWorld Japan, Invited Speaker, June 25, 2008

Grid Computing: Technology and Market Trends, Malaysian Grid Computing Conference, Keynote Speaker, Kuala Lumpur, May 15-16, 2008.

A Reference Model for Network-Centric Ground Systems, Implementation Tools, and Industrial Development Opportunities, SMC Industry Days, Invited Speaker, April 16, 2008.

Conflicts and Synergies between Academia and Industry, International Symposium on Grid Computing, Taipei, Taiwan, April 9-11, 2008.

Refining a Reference Model for Network-Centric Ground Systems and Drilling Down into Emerging Standards and Implementation Tools, break-out session (extended panel) organizer and moderator, Eleventh Ground System Architectures Workshop, March 31-April 3, 2008.

Evolutionary Pressures on Grids, HPC, and the Distributed Computing Community, HPC Horizons Summit, Invited Speaker, Indian Wells, March 11-13, 2008

Grids, Virtualization and Service-Oriented Networks, panel organizer, IEEE Globecom '07, Washington, D.C., November 27, 2007.

Musings on Distributed Systems and Distributed Programming, Visiting Scientist, Distributed Programming Abstractions workshop, UK e-Science Center, Edinburgh, UK, October 31-November 2, 2007.

A Notional Reference Architecture for Netcentric Ground Systems and Emerging Standards, break-out session (extended panel) organizer and moderator, Tenth Ground System Architectures Workshop, March 26-28, 2007.

Invited Talk: *Geospatial Information, Fundamental Grid Challenges, andthe Role of Standards Organizations*, European GeoInformatics Workshop, Edinburgh, UK, March 9, 2007.

OGF-UNSDI Engagement, United Nations Spatial Data Infrastructure Global Partners Meeting, ESA/ESRIN, Frascati, March 2, 2007.

Invited Talk and Session Chair: *Space and Environmental Community Grid Needs vs. Project Achievements*, 2nd Grid & e-Collaboration Workshop for the Earth Science and the Space Community", ESA/ESRIN, Frascati, December 12, 2006.

Service-Oriented Architectures and Web/Grid Standards for Network-centric Ground Systems, break-out session (extended panel) organizer and moderator, Ninth Ground System Architectures Workshop, March 28-30, 2006.

Research Challenges Arising from Heterogeneity, Panelist, Heterogeneous Computing Workshop, Colorado, April 3, 2005.

Grid and Web Service Standards for Government and Defense Systems, break-out session (extended panel) organizer and moderator, Eighth Ground System Architectures Workshop, March 30-April 1, 2005.

Event-Driven Workflows, Future Generation Grids, Dagstuhl Seminar 04451, Scholss Dagstuhl, Germany, November 1-5, 2004.

Event-Driven Workflows, INRIA/ENS, Lyon, France, September 30, 2004.

The Operational and Deployment Issues Associated With Cluster and Grid Based Computing, panel member, Cluster Computer and Grid for Scientific Computing, September 26-29, 2004.

Grid and Web Service Standards for Government and Defense Systems, break-out session (extended panel) organizer and moderator, Eighth Ground System Architectures Workshop, March 30-April 1, 2004.

The Great Academia/Industry Grid Debate, panel organizer and moderator, Fourth International Workshop on Grid Computing, Phoenix, Arizona, November 17, 2003.

Grids and Embedded Systems, Invited Speaker, Seventh Annual Workshop on High Performance Embedded Computing, Lexington, Massachusetts, September 23-25, 2003.

Building a Grid-Aware System, Panelist, IPDPS, Nice, France, April 23, 2003.

Optimistic Grid Computing, Performance Analysis and Distributed Computing Workshop, Dagstuhl Seminar 02341, Scholss Dagstuhl, Germany, August 19-23, 2002.

Scalable Time Management Algorithms Using Active Networks for Distributed Simulation, INRIA/ENS, Lyon, France, July 16, 2002.

Time Management in Active Networks, DARPA Active Networks PI Meeting, Orlando, Florida, December 3-5, 2001.

Time Management in Active Networks, DARPA Active Networks PI Meeting, Jackson Hole, Wyoming, June 4-6, 2001.

The Grid: Moving It To Prime Time, Panelist, Cluster Computing and the Grid (CCGrid), Brisbane, Australia, May 18, 2001.

Team 2 Demo: HLA Active Routing Project, DARPA Active Networks PI Meeting, Atlanta, December 7, 2000.

The Fundamental Performance Challenge of Grid Computing, Panelist, OptiCon, Dallas, Texas, October 25, 2000.

Component-Based Processing: Components and Grid Computing, Distributed Processing Forum, Chantilly, Virginia, August 28, 2000.

Update on Distributed Simulation Activities and Outreach, DARPA Active Networks PI Meeting, Portland, Oregon, May 18, 2000.

Dynamic, Data-Driven Application Systems, Computing Systems Support Working Group chair, National Science Foundation workshop, Washington, D.C., March 8-10, 2000.

Quality of Service for Media and Grid Computations, short version of HiPC-6 tutorial, Tsukuba University, Tsukuba, Japan, December 27, 1999.

Panel Moderator: "Beyond Grids: Large-scale Computing in a Connected World", Supercomputing '99, Portland, Oregon, November 19, 1999.

Grid Computing, Active Networks and Distributed Simulation, DARPA Active Networks PI Meeting, Albuquerque, New Mexico, November 18, 1999.

Active Networks and Grid Computing, Active Middleware Services Workshop, Chicago, Illinois, October 21, 1999.

Qualis: The Quality of Service Component for the Globus Metacomputing System, Globus Retreat talk, Oakbrook, Illinois, (short version), August 4, 1998.

Qualis: The Quality of Service Component for the Globus Metacomputing System, Fakultt fr Informatik, Technische Universitt Mnchen, (long version), June 9, 1998.

Applications Other than Conferencing, Panelist, CAIRN Experimenters Workshop, Tucson, AZ, March 13-14, 1998.

Quality-of-Service for Metacomputing, Dept. of Information and Computer Science, University of California at Irvine, October 17, 1997.

Quality-of-Service for Metacomputing, Dept. of Computer Science, University of Southern California, October 3, 1997.

Resource Management in Wide-Area Distributed Computing, Politechnico di Milano, Milan, Italy, October 28, 1996.

Resource Management in Wide-Area Distributed Computing, Universita di Padua, Padua, Italy, October 15, 1996.

Participant in the Parallel Tools Consortium and the Distributed Array Query and Visualization project, May 1995 to 1997.

Enabling Parallel Applications: What Tool Support Do Third-Party and Industrial Software Developers Need?, Panelist, Parallel Tools Consortium First General Meeting, NASA Ames Research Center, Moffett Field, CA, June 8-10, 1994.

Fundamental Aspects of Parallel Language Design, Minnowbrook Workshop on Parallel Software Engineering, Blue Mountain Lake, NY, August 10-13, 1992. Sponsored by Syracuse University, the Northeast Parallel Architectures Center and Rome Laboratories.

Single-Assignment in an Imperative Language, Dept. of Computer Science, University of Manchester, Manchester, England, July 19, 1991.

Demonstrations

GridRPC and the Satellite Orbital Analysis Program (SOAP), *Supercomputing 2003*, November 17-21, 2003.

Scalable Time Management Algorithms using Active Networks for Distributed Simulation, *DARPA Active Networks Conference and Exposition*, San Francisco, May 30, 2002.

Team 2 Demo: HLA Active Routing Project, *DARPA Active Networks PI Meeting*, Atlanta, December 7, 2000.

Collision Vision: Launch-satellite collision detection, *Globus project for Supercomputing 98*, Orlando, November 10-13, 1998.

gv5d: Remote visualization of scientific data, *IEEE 7th International Symposium on High Performance Distributed Computing*, Chicago, Illinois, July 30, 1998.

Near-real-time Detection and Visualization of Clouds, *Globus project for Supercomputing 97*, San Jose, November 18-21, 1997.

Near-real-time Detection and Visualization of Clouds, *Consortium for Research on Parallel Computing*, Annual Meeting, Argonne National Lab, May 15, 1996.

Near-real-time Detection and Visualization of Clouds, *I-WAY project for Supercomputing 95*, San Diego, December 5, 1995.

Posters

Nave, D.M., Chrisochoides, N., Lee, C., Deerfield, D.W., Towards Optimistic Delaunay Meshing on the Grid, Poster, International Meshing Roundtable, September 18-22, 2004.

Teaching and Tutorials

Programming Languages, CS 131, University of California, Los Angeles, Fall 2002.

Parallel and Distributed Programming, CS 133, University of California, Los Angeles, Winter 2002.

Quality of Service for Media and Grid Computations, Tutorial at the 6th International Conference on High-Performance Computing, (HiPC-6), Calcutta, India, December 17-21, 1999.

Awards

Visiting Scientist, UK e-Science Programme, Distributed Programming Abstractions Theme, Edinburgh, October 31-November 2, 2007.

Visiting Scientist, UK e-Science Programme, Geospatial Semantic Interoperability Theme, Edinburgh, March 6-9, 2007.

University of California Regents Dissertation Fellowship, Winter, 1987.

State of California, Microelectronics and Computers Fellowship, 1982-1983.

Pullman Scholar, 1971-1975.

Work Experience

The Aerospace Corporation, El Segundo, California January 1989 - Present. *Senior Scientist, August 2006-present. Direct corporate and external research in parallel/distributed computing, languages, and architectures. Also responsible for parallel/distributed computing technical support of Air Force and other governmental space systems. Section Manager, August 1997-August 2006. Project Leader, January 1997-August 1997. Engineering Specialist, August 1995-January 1997. Senior Member of the Technical Staff, May 1992-August 1995. Member of the Technical Staff, January 1989-May 1992.*

European Computer Research Center, Munich, West Germany April - August 1986. *Did research with Prof. Lubomir Bic (on sabbatical from UCI) on the parallel execution of logic languages.*

Jet Propulsion Laboratory, Pasadena, California June - August 1983. *Summer Intern. Designed and wrote a test case generator in* PASCAL *for systems written in the* CRISP-80 *program design language.*

T.G. Brandon Corp., Milwaukee, Oregon December 1978 - November 1979. *Programmer (part-time). Wrote software that was loaded into* PROMs *for a digital processing oscilloscope based on the* TI TMS-9900 *microprocessor. This included a plotter routine, keypad programming and an* RS232 *port which could interact with keypad programs.*

University of Oregon Health Sciences Center September 1975 - August 1980. *Programmer and research assistant in Dept. of Medical Psychology and later in the Kresge Hearing Research Laboratory. Designed and built interface hardware and wrote extensive software for real-time data acquisition from laboratory animals (including humans) using* PDP-8 *and* PDP-11/34.

Miscellaneous Information

Ability in German. U.S. Citizen.

Vitae

Nov. 19, 1952	Born Chicago, Illinois.
June 1975	B.A. in Psychology, Reed College, Portland, Oregon.
Sept. 1975 – Aug. 1980	Programmer and Research Assistant, Dept. of Medical Psychology and later the Kresge Hearing Research Laboratory, University of Oregon Health Sciences Center, Portland, Oregon.
May 1978 – Aug. 1980	Programming Consultant, Portland, Oregon.
June 1982	M.S. in Computer Science, Syracuse University, Syracuse, New York.
Summer 1983	Internship, Jet Propulsion Laboratory, Pasadena, California.
Sept. 1983 – June 1985	Teaching Assistant, Dept. of Information and Computer Science, University of California, Irvine.

Summer 1985	Lecturer, Dept. of Information and Computer Science, University of California, Irvine.
April 1986 - August 1986	Visiting Researcher, European Computer-Industry Research Center, Munich, West Germany.
Sept. 1985 – Dec. 1988	Research Assistant, Dept. of Information and Computer Science, University of California, Irvine.
Dec. 1988	Ph.D. in Computer Science, University of California, Irvine.
Jan. 1989 – May 1992	Member of the Technical Staff, Computer Systems Research Department, The Aerospace Corporation, El Segundo, California.
May 1992 – Aug. 1995	Senior Member of the Technical Staff, Computer Systems Research Department.
March 14, 1993	Married to Kathryn Elizabeth Kramer.
Aug. 1995 – Jan. 1997	Engineering Specialist, Computer Systems Research Department.
Jan. 1997 – Aug. 1997	Project Leader, Computer Systems Research Department.
Aug. 1997 – Aug. 2006	Section Manager, Computer Systems Research Department.
Aug. 2006 – Sept. 2021	Senior Scientist, Computer Systems Research Department.
March 23, 2020	Federation Partners, LLC, incorporated.
Sept. 1, 2021	Retired from The Aerospace Corporation.