Yolanda Gil

Curriculum Vitae

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Contact Information

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Current Positions

- **Director of New Initiatives in Artificial Intelligence and Data Science** in the Viterbi School of Engineering at USC (since August 2021).

- **Senior Director for Artificial Intelligence and Data Science Strategy** in the Information Sciences Institute at USC (since June 2020).

- **Director of Data Science Programs** in the Department of Computer Science at USC (since July 2020).

- **Principal Scientist** in the Information Sciences Institute at USC (since June 2018).

- **Director of Knowledge Technologies** in the Information Sciences Institute at USC (since September 2010).

- **Research Professor** in the Department of Computer Science at USC (since August 2009).

- **Research Professor** in the Spatial Sciences Institute at USC (since August 2016).

- **Adjunct Professor** in the Wrigley Environmental Sciences Institute at USC (since August 2018).

- **Director of the Center for Knowledge-Powered Interdisciplinary Data Science** at USC (since September 2018).

- **Associate Division Director for Research** of the Intelligent Systems Division in the Information Sciences Institute at USC (since September 2002). The division includes more than one hundred researchers and students in a wide range of areas in Artificial Intelligence.

- **Principal Investigator and Project Leader** of the Interactive Knowledge Capture research group in the Information Sciences Institute at USC (since June 1996).

Education

- Carnegie Mellon University (1986-1992). Ph.D. in Computer Science.

  Dissertation title: "Acquiring Domain Knowledge for Planning by Experimentation."

  Thesis committee: Jaime Carbonell (chair), Tom Mitchell, Herbert A. Simon, Nils J. Nilsson (external member).

- University of Southern California (2015). Management Development Program, Office of Executive Education, Marshall School of Business.

- Carnegie Mellon University (1986-1989). M.Sc. in Computer Science.

- Polytechnic University of Madrid (1980-1985). B.S. in Computer Science ("Licenciatura'").

  Undergraduate thesis: "Concurrent Simulation of Logic Circuits."

Previous Positions

- **Associate Director of Data Science Programs** at USC/CS (2017-2020).

- **Senior Research Scientist** in the Intelligent Systems Division at USC/ISI (1992-1996).

- **Research Associate Professor** in the Department of Computer Science at USC (2002-2009).

- **Research Assistant Professor** in the Department of Computer Science at USC (1994-2002).

Research Interests

- **Automated discovery**: Intelligent systems that assist scientists in data analysis and discovery tasks; semantic infrastructure to interconnect knowledge across sources and domains in science.

- **Semantic workflows**: Intelligent assistance and automation to support the creation of large-scale scientific applications; collaborative workflow development; scientific workbenches for high-end computing environments.

- **Social knowledge collection**: Sociotechnical aspects of social knowledge collection; extending traditional social collection frameworks with provenance information; collaborative knowledge capture for science.

- **Proactive knowledge capture**: Knowledge authoring; knowledge acquisition; learning procedures from demonstration and from examples.

- **Interactive intelligent systems**: Knowledge-rich problem solving; user-centered decision aids; mixed-initiative systems.

- **Trust and provenance**: Trust on web resource content; trust judgments based on information quality and provenance; provenance in science; provenance exchange.

- **Knowledge management and the Semantic Web**: Knowledge and information management; knowledge modeling and reuse; collection and organization of semantic markup for the Web.

- **Artificial intelligence and data science**: Role of intelligent systems in automating and improving data analysis, particularly in science domains.

Awards and Honors

- **M Lee Allison Award for Outstanding Contributions to Geoinformatics and Data Science** from the Geological Society of America (GSA) in 2022, made to an individual who has contributed in an outstanding manner to geology through the application of the principles of geoinformatics.

- **Elected Fellow of the Institute of Electrical and Electronics Engineers** (IEEE) in 2021, conferred to 0.1% of its 400,000 members for outstanding record of accomplishments in any of the IEEE fields of interest:

> *"For contributions to geoscience and scientific discovery with intelligent workflow systems."*

- **Elected Fellow of the American Association for the Advancement of Science (AAAS) in 2020**, an award that recognizes members whose "efforts on behalf of the advancement of science, or its applications, are scientifically or socially distinguished and is given to only one percent of the association's 120,000 members:

  > *"For outstanding contributions to the field of artificial intelligence for supporting scientific discovery."*

- **Elected member, Phi Kappa Phi** Academic Honor Society, 2020-present, the oldest all-disciplines and most selective honor society in the US that promotes the unity and democracy of education.

- **Selected as one of 15 contributions to the Grand Challenges in the Earth and Space Sciences** for the Centennial Collection of the Review of Geophysics journal of the American Geophysical Union, November 2019, for the publication:

  > *"PaCTS 1.0: A Crowdsourced Reporting Standard for Paleoclimate Data." D. Khider, J. Emile-Geay, N. P. McKay, Y. Gil, D. Garijo, V. Ratnakar, M. Alonso-Garcia, S. Bertrand, O. Bothe, P. Brewer, A. Bunn, M. Chevalier, L. Comas-Bru, A. Csank, E. Dassié, K. DeLong, T. Felis, P. Francus, A. Frappier, W. Gray, S. Goring, L. Jonkers, M. Kahle, D. Kaufman, N. M. Kehrwald, B. Martrat, H. McGregor, J. Richey, A. Schmittner, N. Scroxton, E. Sutherland, K. Thirumalai, K. Allen, F. Arnaud, Y. Axford, T. Barrows, L. Bazin, S. E. Pilaar Birch, E. Bradley, J. Bregy, E. Capron, O. Cartapanis, H.-W. Chiang, K. M. Cobb, M. Debret, R. Dommain, J. Du, K. Dyez, S. Emerick, M. P. Erb, G. Falster, W. Finsinger, D. Fortier, N. Gauthier, S. George, E. Grimm, J. Hertzberg, F. Hibbert, A. Hillman, W. Hobbs, M. Huber, A. L. C. Hughes, S. Jaccard, J. Ruan, M. Kienast, B. Konecky, G. Le Roux, V. Lyubchich, V. F. Novello, L. Olaka, J. W. Partinv C. Pearce, S. J. Phipps, C. Pignol, N. Piotrowska, M.-S. Poli, A. Prokopenko, F. Schwanck, C. Stepanek, G. E. A. Swann, R. Telford, E. Thomas, Z. Thomas, S. Truebe, L. von Gunten, A. Waite, N. Weitzel, B. Wilhelm, J. Williams, M. Winstrup, N. Zhao, and Y. Zhou.*

- **Best Paper award** at the Tenth International Conference on Indoor Air Quality, Ventilation and Energy Conservation in Buildings held in Bari, Italy in September 2019:

> *"A Personal Visual Comfort Model: Predict an Individual's Visual Comfort Using Occupant Eye Pupil Sizes and Machine Learning." Lingkai Cen, Joon-Ho Choi, Xiaomeng Yao, Yolanda Gil, Shrikanth Narayanan, and Maryann Pentz.*

- **Inaugural EarthCube Legacy Award**, in June 2019 recognizing outstanding leaders who have made a significant and lasting impact on the National Science Foundation's EarthCube initative for geosciences:

  > *"For leading community initiatives that helped clarify and articulate EarthCube vision and its semantic and technical foundation; for community building through expertise, creativity, and leadership; for broad mentoring impact, ranging from students and early career researchers to later career researchers all over the world; and for making many noteworthy contributions that set a foundation for EarthCube's development and success."*

- **Best Poster award** at the 2018 INCF Neuroinformatics Congress, held August 9-10, 2018 in Montreal, Canada, for:

  > *"ENIGMA-ODS: A Platform for Global Neuroscience Collaborations in the ENIGMA Consortium." Agnes McMahon, Daniel Garijo, Ryan Espiritu, Faisal Rashid, MiHyun Jang, Tejal Patted, Varun Ratnakar, Yolanda Gil, Paul Thompson, and Neda Jahanshad.*

- **Principal Scientist**, USC Information Sciences Institute, inaugural award in June 2018, recognizing sustained high level of research productivity, a record of professional community leadership and outstanding contributions to their field, and sustained record of significant impact on the Institute:

  > *"For influential research on shared creation and management of data."*

- **Selected for Computational Biology area for PLOS ONE 10 Anniversary Data Collection, Public Library of Science** (PLoS) in 2017, included as author of one of 20 articles out of more than 170,000 published to date, 11,000 of those in Computational Biology:

  > *"The collection highlights papers across a wide variety of disciplines with underlying datasets that have proven to be important or widely used or are particularly well reported."*

- **Elected Fellow of the Association for Computing Machinery** (ACM) in 2016, an award that recognizes impact on the community and is given to only one percent of the association's 100,000 members:

  "For leadership in advancing the use of artificial intelligence in support of science and for service to the community."

- **Elected Fellow of the American Association of Artificial Intelligence** (AAAI) in 2012, a program that recognizes individuals who have made significant sustained contributions to the field of artificial intelligence:

  "For significant contributions to intelligent user interfaces, knowledge capture, representations for web-based science, and for leadership in the Artificial Intelligence community."

- **Finalist for Best In-Use Paper Award** at the International Semantic Web Conference, held October 23-27 2011 in Bonn, Germany for:

  "Mind Your Metadata: Exploiting Semantics for Configuration, Adaptation, and Provenance in Scientific Workflows." Yolanda Gil, Pedro Szekely, Sandra Villamizar, Thomas Harmon, Varun Ratnakar, Shubham Gupta, Maria Muslea, Fabio Silva, and Craig Knoblock.

- **Finalist for Best Paper Award** at the International Conference on Intelligent User Interfaces, held February 13-16 2011 in Palo Alto, California (USA) for:

  "A Formal Framework for Combining Natural Instruction and Demonstration for End-User Programming." Christian Fritz and Yolanda Gil.

- **Third Prize in the 2010 Semantic Web Challenge**, a major competition that recognizes accomplishments in developing significant applications in the Semantic Web, for
  "Shortipedia: Aggregating and Curating Semantic Web Data" by Denny Vrandecic, Varun Ratnakar, Markus Krotzsch, and Yolanda Gil.

- **Best Paper Award** at the International Conference on Intelligent User Interfaces, held January 14-17 2001 in Santa Fe, New Mexico (USA) for:

  "An Integrated Environment for Knowledge Acquisition" by Jim Blythe, Jihie Kim, Surya Ramachandran, and Yolanda Gil.

- **Award from the Defense Advanced Research Projects Agency** and Rome Laboratory Planning Initiative, presented by Tom Garvey (DARPA ISO Assistant Director for C2/Planning) on June 12, 1996:

  > *"In recognition of and sincere appreciation for efforts above and beyond the call of duty to ensure the successful demonstration of Automated Air Campaign Planning for the US Air Force Combat Command."*

- **Meritorious Service Award from USC/ISI**, presented by Herb Schorr (USC/ISI Director) and Robert Balzer (USC/ISI Division Director) on March 16, 1998:

  > *"For significantly improving ISI's access to quality graduate research students."*

- **ISI Teaching Fellowship**, Fall 1996.

Professional Activities

Service in Professional Organizations and Other Advisory Bodies

- **Member of the Board of Directors of the Computing Research Association (CRA),** appointed in 2022. The Computing Research Association (CRA) counts among its members more than 200 North American organizations active in computing research: academic departments of computer science and computer engineering; laboratories and centers in industry, government, and academia; and affiliated professional societies. With the help of industrial, academic and government leaders, CRA unites the computing community to advance future directions of the field. The CRA Board provides the membership for various standing committees, including the Government Affairs, Snowbird Conference, Taulbee Survey, Finance, and Elections committees.

- **Elected President of the Association for the Advancement of Artificial Intelligence (AAAI):** President-Elect (2016-2018), President (2018-2020), Past-President (2020-2022). The Association for the Advancement of Artificial Intelligence (AAAI) is the foremost international scientific organization for AI, with more than 300 elected Fellows and over 6,000 members. Founded in 1979, AAAI is responsible for several major AI conferences, and confers a number of major awards and recognitions including the $1M AAAI Squirrel AI Award for AI for the Benefit of Humanity which was established during my tenure. As President I co-led a community effort to develop a priorities and recommendations to support AI research in the US, releasing a report titled "A 20-Year Community Roadmap for Artificial Intelligence Research in the US" and presented it in Congress, the Pentagon, and the White House. As Past-President, I was founding chair of the

AAAI Committee on US Initiatives and Policy which represents the AAAI organization in US policy matters.

- **Elected to the National Science Foundation's EarthCube founding Leadership Council as representative of the EarthCube Technology and Architecture Committee**, and appointed Chair of the EarthCube Technology and Architecture Committee (TAC), 2014-2017. The EarthCube initiative is a partnership between the NSF Directorate of Geosciences and the NSF Directorate of Computer Science and Engineering to transform geosciences research through novel cyberinfrastructure that is driven by the needs of the science community and supports unprecedented sharing, exploration, and discovery. Its Leadership Council oversees the governance of the EarthCube initiative, and the TAC is responsible for technology development, architecture design, and fostering standards.

- **Elected Chair of the Special Interest Group on Artificial Intelligence of the Association for Computing Machinery (ACM SIGAI)**, 2010-2013 and 2013-2016; Past Chair (2016-2019). ACM SIGAI has more than one thousand members. It sponsors major conferences such as Autonomous Agents and Multiagent Systems (and gives the prestigious ACM/SIGAI Autonomous Agents Research Award), Intelligent User Interfaces, and Human-Robot Interaction. The Allen Newell Award is also given annually to outstanding AI researchers. SIGAI launched a quarterly magazine (AI Matters) in Fall 2014, and started the Career Network Conference (CNC) for early career AI researchers in January 2015.

- **Chair of the Incubator Group on Provenance at the World Wide Web Consortium (W3C)**, 2009-2010. The W3C is an international standards body for Web Architecture and promotes the establishment of community-driven activities that may lead to standardization efforts (http://www.w3.org). This Incubator Group on Provenance produced numerous documents including requirements, use cases, a state-of-the-art report, and mappings across well-known provenance vocabularies. More importantly, it proposed a charter for a new Provenance Interchange Working Group with 17 core provenance concepts as a starting point for a standard on provenance for the web. This Working Group started in April 2011 and released the PROV standard in April 2013.

- **Chair of the Conference Committee of the Association for the Advancement of Artificial Intelligence (AAAI),** Chair 2006-2009 and Associate Chair 2004-2006. This committee oversees the AAAI and IAAI conferences as well as the AIIDE conference and the new International Conference on Weblogs and Social Media. Added several ongoing events to the conference, including special tracks of technical papers, a Nectar Track for accessible overviews of AI research published in other venues, and a Senior Member submission track. Created a new Symposium on Educational Advances in Artificial Intelligence (EAAI) as a new Teaching Forum where accomplishments in AI education are highlighted at the annual AAAI conference.

- **Member of the Advisory Council of the National Science Foundation Directorate for Computing and Information Science and Engineering (CISE),** 2006-2008. Major CISE activities during this period include separating the cyberinfrastructure division within CISE into a separate Office of Cyberinfrastructure (OCI), conducting several major revisions of the Global Environment for Network Innovations (GENI) to revamp networking research as a flagship major CISE initiative, and providing feedback to the National Science Board regarding cost sharing and PI limitations on NSF proposals.

- **Councilor of the Association for the Advancement of Artificial Intelligence (AAAI),** 2003-2009. When I joined the council, AAAI was facing a tremendous fragmentation of the field as new conferences were being constituted (Agents, IUI, ISWC, UAI) and older ones were cementing and growing their attendance (CogSci, ACL). I led an activity in the AAAI Executive Council to strengthen the relations between AAAI and other conferences. I volunteered to report to the council with factual data and perceived causes of this decline. In 2005, I submitted a lengthy document containing statistics about ten relevant conferences, and included information about their organization as well as feedback regarding the conference constituency vis-à-vis AAAI. The report highlighted important missed opportunities, and caused a major revamping of the AAAI Outreach Committee and the AAAI Conference Committee. I was asked to co-chair the latter, and became chair a year after which made me remain in the council well beyond the standard three-year term for elected councilors.

Editorial Boards

- PeerJ Computer Science (July 2020 – present). Advisory Board Member.

- Data Science: Methods, Infrastructure, and Applications journal (March 2016 – present). Founding Editorial Board Member.

- MethodsX (January 2016 – present). Advisory Board Member for the Computer Science Section.

- AI Matters, ACM SIGAI Quarterly Newsletter (October 2014 – present). Founding Editorial Board Member.

- Human Computation Journal (December 2013 – present). Founding Editorial Board Member.

- Artificial Intelligence Journal (January 2013 – present). Editorial Board Member.

- ACM Transactions on Intelligent Systems and Technology (September 2009 – present). Founding Editorial Board Member.

- Applied Ontology (December 2004 – present). Founding editorial board member.

- Journal of Web Semantics (December 2002 – December 2016). Founding editorial board member.

- The Knowledge Engineering Review (July 1998 – December 2015). Editorial board member.

- Cognitive Science (January 2006 – December 2008). Associate Editor.

- IEEE Intelligent Systems (July 1998 – March 2013). Editorial board member.

Conference Organizing Committees

- Co-Chair (with Chad Jenkins and Emmanuel Johnson), AAAI Fall Symposium on "Distributed Teaching Collaboratives for AI and Robotics," November 2022.

- Earth Day Co-Chair, Twenty-Sixth ACM KDD Conference on Knowledge Discovery and Data Mining (KDD), 2020.

- Co-Chair (with Andrew Su), IEEE International Conference on e-Science Workshop on Advanced Knowledge Technologies for Science in a FAIR World (AKTS), 2019.

- General Chair, International Semantic Web Conference (ISWC), 2016.

- Chair, K-CAP Workshop on "Scientific Knowledge Capture," 2015.

- Co-chair (with Vasant Honavar), ACM SIGKDD Workshop on Discovery Informatics, 2014.

- Co-chair (with Lawrence Hunter), AAAI Workshop on "Discovery Informatics: Scientific Discoveries Enabled by AI," 2013.

- Associate Chair, Annual Conference of the Association for the Advancement of Artificial Intelligence (AAAI), 2013.

- Co-chair (with Gully Burns, Yan Liu, and Natalia Villanueva-Rosales), AAAI Symposium on "Discovery Informatics: AI Takes a Science-Centered View on Big Data," 2012.

- Co-chair (with Haym Hirsh), AAAI Symposium on "Discovery Informatics: The Role of Artificial Intelligence in Innovating Scientific Processes," 2012.

- Co-chair and conference founder, The First Symposium on Educational Advances in Artificial Intelligence (EAAI), 2010.

- Co-Chair for World Wide Web Conference (WWW) Semantic Web Track, 2010.

- Conference Committee Chair, American Association for Artificial Intelligence (AAAI), 2006-2009.

- Program Co-Chair, National Conference for Artificial Intelligence (AAAI), 2006.

- Program Co-Chair, Fourth International Semantic Web Conference (ISWC), 2005.

- Tutorial Co-Chair, National Conference for Artificial Intelligence (AAAI), 2005.

- Program Chair, Intelligent User Interfaces (IUI), 2002.

- General chair, International Conference on Knowledge Capture (K-CAP), 2009, 2003.

- Co-chair and conference founder (with Mark Musen and Jude Shavlik), First International Conference on Knowledge Capture (K-CAP), 2001.

- Co-chair (with Karen Myers), AAAI Workshop on "Representational Issues for Real-world Planning Systems," 2000.

- Chair, AAAI Symposium on "Acquisition, Learning, and Demonstration: Automating Tasks for Users," 1996.

- Co-chair (with Manuela Veloso), AAAI Symposium on "Planning and Learning: On to Real Applications," 1994.

Conference Program Committees

- American Association for Artificial Intelligence (AAAI). Program committee: 1996, 1997, 1998, 2004, (program co-chair 2006), 2008, (associate chair 2013). Nectar track: 2007, 2008.

- International Joint Conference on Artificial Intelligence (IJCAI). Senior program committee: 2009, 2011, 2013. Reviewing committee: 2001, 2003.

- International Conference on Intelligent User Interfaces (IUI). Program committee co-chair: 2002. Meta-reviewer: 2005, 2006, 2007, 2008, 2009, 2011. Program committee: 2000, 2001, 2003, 2004, 2010, 2012.

- World Wide Web (WWW) Conference. Area Chair: 2010. Program committee: 2005.

- International Semantic Web Conference (ISWC). Program committee co-chair: 2005. Meta-reviewer: 2008. Program committee: 2003, 2004, 2009, 2010, 2011, 2013, 2014, 2018.

- Innovative Applications of Artificial Intelligence (IAAI): Program committee: 2004, 2005, 2008, 2012.

- IEEE International Conference on e-Science. Program committee: 2012.

- International Conference on Machine Learning (ICML). Program committee and area chair: 2002.

- International Conference on Ontologies, Databases, and Applications of Semantics (ODBASE). Program committee: 2003.

- Artificial Intelligence Planning Systems (AIPS). Program committee: 1996, 1998, 2000.

- Principles of Knowledge Representation and Reasoning (KR). Program committee: 2000.

- IEEE Symposium on Multi Agent Security and Survivability (MAS&S). Program committee: 2004, 2005.

Other Reviewing and Service

- ACM Heidelberg Laureate Forum, Young Researcher Selection Committee, 2023.

- IEEE Fellows Committee, 2021.

- AAAI Squirrel AI Award for AI for the Benefit of Humanity ($1M award), founding Chair and Committee Chair, 2020, 2021.

- AAAI Fellows Committee Chair, 2020-2021.

- Vice-President, Semantic Web Science Association (SWSA), which oversees the International Semantic Web Conference (ISWC), 2017-2021.

- National Science Foundation, served as proposal reviewer in many panels and as site reviewer for large awarded projects.

- National Institutes of Health, served as ad-hoc proposal reviewer in standing panels.

- Air Force Office of Scientific Research, ad-hoc proposal reviewer.

- Kyoto Prize, Inamori Foundation, Kyoto, Japan.

- MIT Press, book reviewer.

- AAAI Awards Committee 2005-2009.

- IJCAI Advisory Committee, 2007, 2014.

- IJCAI Awards Review Committee, 2007, 2015.

- AAAI Grants Committee, 2004-2006.

Recent Invited Presentations

Videos and slides available from http://www.isi.edu/~gil/presentations/

- Keynote Talk at the Fourth ISCB Conference on Semantics in Healthcare and Life Sciences (CSHALS), on "Semantics for Computational Workflows: A Top Ten List," January 2011.

- Invited Presentation at the Beyond the PDF Workshop, on "Shared Provenance Representations for Scientific Reproducibility through Semantic Workflows," January 2011.

- Invited presentation at the US National Science Foundation (NSF), on "Discovery Informatics: Science Challenges for Intelligent Systems," June 2012.

- Keynote Talk at the Twentieth International Conference on Case-Based Reasoning (ICCBR 2012), on "Reproducibility and Efficiency of Scientific Data Analysis: Scientific Workflows and Case-Based Reasoning," September 2012.

- Invited presentation at the American Geophysical Union (AGU) Conference, on "Designing a Roadmap for Workflow Cyberinfrastructure in the Geosciences: From Big Data to the Long Tail," December 2012.

- Invited Talk at the Eighty-first Open Geospatial Consortium Technical and Planning Committee Meeting, on "Reproducibility, Workflows, and the W3C Provenance Standard," January 2013.

- Invited talk at the International Conference on Collaboration Technologies and Systems (CTS), on "Social Knowledge Collection," May 2013.

- Invited presentation at the Annual Conference on Meaningful Use of Clinical Data (MUCMD), on "Workflows and Social Computing," August 2013.

- Keynote presentation at the Semantic MediaWiki Conference (SMWCon) on "Organic Data Science: Opening Scientific Data Curation", May 2014.

- Invited presentation at the American Geophysical Union (AGU) Conference, on "Semantic Workflows and Provenance-Aware Software", December 2013.

- Invited presentation at the Semantic MediaWiki Conference (SMWCon), on "Semantic Wikis for Science", May 2014.

- Keynote talk, Seventh International Congress on Environmental Modeling and Software (iEMSs), on "Knowledge-Driven Infrastructure: Towards Intelligent Science Assistants," June 2014.

- Keynote talk, Federation of Earth Science Information Partners (ESIP) Summer Meeting, on "Shedding Light on the 'Dark Software' of Science," July 2014.

- Keynote talk, International Semantic Web Conference (ISWC), on "Semantic Challenges in Getting Work Done," October 2014.

- Keynote talk, Third Annual Conference on Advances in Cognitive Systems (ACS), on "The Human Bottleneck in Data Analytics: Opportunities for Cognitive Systems in Automating Scientific Discovery," May 2015.

- Keynote talk, Fifth International Workshop on Climate Informatics (CI), on "Intelligent Systems for Climate Research: When Will Deep Learners Meet Deep Knowledge?," September 2015.

- Invited panelist, DARPA Wait What?, on "AI Ascendant: Designing AIs to do the right thing," September 2015.

- Keynote talk, Eighth International Conference on Knowledge Capture (K-CAP), on "Linked Open Knowledge," October 2015.

- Invited alumni talks, 50th Anniversary of Carnegie Mellon University's Department of Computer Science, on "Intelligent Systems for Scientific Discovery," October 2015.

- Distinguished Lecture, DeFord Lecture Series, University of Texas Austin, Jackson School of Geosciences, on "Intelligent Systems for Geosciences," February 2016.

- Invited presentation at the Annual Conference on Coupling, Energetics and Dynamics of Atmospheric Regions (CEDAR), on "The Geoscience Paper of the Future: Practical Guidelines for Adopting Digital Scholarship, Reproducible Research, and Open Science," June 2017.

- Invited presentation, 2018 Annual Meeting of the American Association for the Advancement of Science (AAAS), on "Artificial Intelligence for Water Resources

Management: Towards Efficient Integration of Models across Disciplines," February 2018.

- Keynote talk, First US Symposium on Semantic Technologies, on "Quo Vadis: Reflecting on the Past, Looking into the Future," March 2018.

- Invited presentation, DARPA 60th Anniversary Symposium, on "Artificial Intelligence for Rigorous Science and Interdisciplinary Frontiers," September 2018.

- Invited talk, Addis Ababa University, on "Learn to Write a Scientific Paper of the Future: Best Practices for Digital Scholarship, Reproducible Research, and Open Science," July 2019.

- Invited talk, 2019 European Academy of Sciences Symposium on The Future of Science in the 21st Century: Artificial Intelligence, on "Thoughtful Artificial Intelligence: Forging A New Partnership for Data Science and Scientific Discovery," October 2019.

- Invited talk, Annual Meeting of the Midwest Big Data Hub on "Artificial Intelligence for Integrated Modeling," October 2019.

- Invited talk, 2019 Location Powers Data Science Summit of the Open Geospatial Consortium, on "Knowledge-Powered Data Science for Integrated Modeling in Geosciences," November 2019.

- Invited seminar, US Geological Survey, on "MINT: A Knowledge-Rich Framework for Model Integration," November 2019.

- Presidential Address, Association for the Advancement of Artificial Intelligence (AAAI), on "Will AI Write the Scientific Papers of the Future?", February 2020.

- Keynote talk, Web Conference (WWW), on "Embedding the Scientific Record on the Web: Towards Automating Scientific Discoveries," April 2020.

- Keynote talk, Beijing Academy of Artificial Intelligence, on "Thoughtful Artificial Intelligence: Forging a New Partnership for Data Science and Scientific Discovery," June 2020.

- Keynote talk, CSIRO Conference on Machine Learning and Artificial Intelligence Future Science Platform (MARS), on "MINT: A Knowledge-Rich Framework for Model Integration," July 2020.

- Keynote talk, ACM Conference on Knowledge Discovery and Data Mining (KDD), on "Towards Automating Data Science," August 2020.

- Invited talk, 2020 Chinese Congress on Artificial Intelligence (CCAI), on "Thoughtful Artificial Intelligence: Forging A New Partnership for Data Science and Scientific Discovery," August 2020.

- Keynote talk, First ACM Conference on Artificial Intelligence and Finance (ICAIF), on "Towards Automating Data Science," October 2020.

- Invited talk, First Tsinghua AI Cooperation and Governance International Forum, on "Artificial Intelligence for Scientific Discovery," December 2020.

- Keynote talk, WikiCon workshop at the Web Conference (WWW), on "Crowdsourcing to Synthesize Scientific Knowledge," April 2021.

- Invited panelist, Cambridge University, on "AI for Interdisciplinary Scientific Discovery", April 2021.

- Invited talk, National Academies of Sciences, Engineering, and Medicine workshop series on critical technologies for national security, on "AI Advances: Past and Future", July 2021.

- Invited panelist, IEEE Computer Society's 75th Anniversary panel "The Future of Technology and Its Impact on Society" at the EVOPro conference, on "A Twenty-Year Research Roadmap for the US," September 2021.

- Invited panelist, Northwestern University panel on AI and the Future of Work, on "Training the Future AI Workforce", October 2021.

- Keynote talk, Automated Knowledge Base Construction (AKBC) Conference, on "Extracting Knowledge from Text about Models and Workflows: Transparency, Reproducibility, and Automation in Science," October 2021.

- Keynote talk, China National Computer Congress (CNCC) of the China Computer Federation (CCF), on "Artificial Intelligence for Scientific Discoveries through World-Wide Collaborations," October 2021.

- Invited seminar, University of California Irvine, on "AI Systems as Authors of Scientific Papers: Implications for the Future of Scientific Research and Discovery", November 2021.

- Invited talk, Tsinghua University International AI Cooperation and Governance Forum of the Institute for AI International Governance (I-AIIG), on "Grand Challenges in AI Research: A Call for World-Wide Collaboration," December 2021.

- Invited panelist, SXSW Conference, on "A Connected World: The Future of AI Tech," March 2022.

- Invited presentation, 2022 NIST Ontology Summit, on "Ontologies for Exploring Interventions for Disaster Preparation and Response," May 2022.

- Invited presentation, National Academies of Sciences, Engineering, and Medicine Workshop on Test and Evaluation of AI Systems Under Operational Conditions, on "Three Perspectives on Operationalizing AI Systems", September 2022.

- Invited talk, International AI Cooperation and Governance Forum of the Institute for AI International Governance (I-AIIG), on "Towards AI Scientists: Critical Partnerships for Scientific Discovery", December 2022.

Teaching

- Graduate course on "Introduction to Computational Thinking and Data Science" at USC (INF549). Designed a unique course and lectures to teach data science to non-programmers. Incorporated as a required course in new USC MSc programs of Communication Informatics, Spatial Informatics, and other pending interdisciplinary informatics degrees. Taught in Spring 2016, Fall 2016, Fall 2017, and Fall 2018.

- Summer course on "Learn to Write a Scientific Paper of the Future", for FORCE 11 Summer Institute, 2018, 2019.

- Tutorial on "Learn to Write a Scientific Paper of the Future: Reproducible Research, Open Science, and Digital Scholarship" at the Thirty-First AAAI Conference on Artificial Intelligence (AAAI-17) held in San Francisco, California, February 4, 2017. This tutorial was also given several times at USC as part of the Provost Office's Center for Excellence in Research workshop series.

- Training sessions for the "Geoscience Paper of the Future" Initiative, created a 3-hour training seminar and imparted it at various institutions and scientific meetings throughout 2015 to more than 250 scientists. Scientists learn to write papers following best practices of computational reproducibility, open science, and digital scholarship, and submit to a special issue of the American Geophysical Union's Earth and Space Science journal. Training materials are publicly available from https://dx.doi.org/10.6084/m9.figshare.1586773.

- Tutorial on "Computational Workflows for Large-Scale Artificial Intelligence Research" at the Twenty-Third AAAI Conference on Artificial Intelligence (AAAI-08) held in Chicago, Illinois, July 13, 2008.

- Graduate course on "Artificial Intelligence Planning" at USC (CS 541). Initially taught as an advanced seminar course in Fall 1996 and Fall 1998, and instituted as a required course for the CS PhD degree at USC in 1998. Taught every other year until Fall 2003.

Advising

- Post-doctoral researchers:

  – Emmanuel Johnson (2021-present), under the NSF CI Fellows program.
  – Deborah Khider (2018), became first Data Scientist at USC.

- Daniel Garijo (2016-2018), joined USC as a researcher.
- Ricky Sethi (2011-2012), under the NSF CI Fellows program.
- Denny Vrandecic (2010), went to Wikimedia Deutschland to start Wikidata.
- Christian Fritz (2009-2010), went to PARC.
- Paul Groth (2007-2009), went to the Free University of Amsterdam.

- Graduate students:

  - "Reproducibility and Reuse of Experiments in eScience: Workflows, Ontologies and Scripts." Lucas Carvalho, PhD thesis (co-supervised with Claudia Bauzer Medeiros), Institute of Computing, UNICAMP, Campinas, Brazil, and visiting student at USC/ISI, 2018.

  - "Mining Abstractions in Scientific Workflows." Daniel Garijo, PhD thesis (co-supervised with Oscar Corcho), Department of Computer Science of the Polytechnic University of Madrid, 2015.

  - "A Structured Task-Centered Framework for Online Collaboration." Felix Michel, MSc thesis, Department of Computer Science of the Technical University of Munich, 2014.

  - "A Framework for Efficient Text Analytics through Automatic Configuration and Customization of Scientific Workflows." Matheus Hauder, MSc thesis, Department of Computer Science of the University of Augsburg, 2011.

  - "A Script-Based Approach to Modifying Knowledge-Based Systems." Marcelo Tallis, PhD thesis, Department of Computer Science of the University of Southern California, 1999.

  - "Semantic Indexing: Efficient Retrieval of Semantically Similar Concepts." Eric Melz, MSc thesis, Department of Computer Science of the University of Southern California, 1997.

- Recent PhD committees at USC: Joo-Wha Hong (2022) Eunhye Ahn (2019), Robert Schuler (2015), Hyunjin Yoon (2008), Emma Bowring (2007), Martin Michalowski (2007), Ratapoom Tuchinda (2007), Gurmeet Singh (2006).

- Recent external PhD committees:
  - Washington State University: Syrine Belakaria (2022).
  - Free University of Amsterdam: Martine De Vos (2017).
  - University of Illinois Urbana-Champaign: Jeff Pasternack (2011).
  - University of Aberdeen: Edoardo Pignotti (2007).
  - University of Texas at Austin: James Fan (2006).

- Faculty advisor, SIGART/AAAI Doctoral Consortium, held during the National Conference on Artificial Intelligence (AAAI), 1997, 1998, 2014, 2016.

- Lead judge, Intel International Science and Engineering Fair (ISEF) for high school students grades 9-12, Association of the Advancement of Artificial Intelligence Awards, 2014, 2017.

- Invited presentation and mentoring at the Sally Ride Science Festival for attracting young girls to science, "On-Line Collaboratories and the Southern California Earthquake Center", held in November 2003.

Academic Service

- Member, Keck School of Medicine Dean's Research Advisory Committee (2022-present).

- Member, Keck School of Medicine Precision Health Steering Committee (2022-present).

- Co-Chair, Viterbi School of Engineering Task Force on Data Science and AI Curriculum across engineering (2020-2021).

- Director, USC Data Science programs (2020-present).

- Member, President's Working Group on Sustainability, Research Committee (2020-present).

- Member, Joint Provost/Academic Senate Task Force on Research-Track Faculty, (2018-2020).

- Member, Joint Provost/Academic Senate Committee on Libraries, 2019-2020.

- Director, USC Interdisciplinary Data Science programs (2017- present).

- Co-director, USC/Tsinghua University's Master of Science in Communication Data Science dual degree (2019-present)

- Co-Director, USC Master of Science in Environmental Data Science program (2019- present).

- Co-Director, USC Master of Science in Healthcare Data Science program (2018-present).

- Co-Director, USC Master of Science in Policy Data Science program (2018-present).

- Co-Director, USC Master of Science in Communication Data Science program (2017- present).

- Co-Director, USC Master of Science in Spatial Data Science program (2017-present).

- Computer Science Department Chair Advisory Council, USC (2007-2008). Consultation by the chair on decisions and plans for the Computer Science Department.

- Computer Science Department Committee for PhD programs, USC (2007-2008). Participate on PhD admissions, recruiting, and fellowships. Nominations to various awards for recognition of RAs and TAs in the department.

- Advisory Committee on National and International Graduate Fellowships, USC (2003-2005). Served as ad-hoc reviewer 2005-2007.

- Computer Science Department Hiring Committee, autonomy area, USC (2004).

- Computer Science Department Performance Evaluation committee for research faculty, USC 2003.

- Head of the Computer Science Department PhD Graduate Student Assistance Committee, USC (1998-2005). Nomination of fellowships, assignment of Teaching Assistantships, mediation of Research Assistantship awards, and recruiting. Member of committee 1995-1998.

Funded Awards and Grants

Descriptions and project pointers at http://www.isi.edu/~gil/awards.html.

- **Artificial Intelligence and Community Driven Wildland Fire Innovation via a WIFIRE Commons Infrastructure for Data and Model Sharing (Phase II)**

   Funder: National Science Foundation (NSF)

   Award number: OIA-2134904.

   Period of performance: September 2021 - August 2023.

   Principal Investigators: PI: Ilkay Altintas; Co-PIs: Yolanda Gil, John Hiers, and Rodman Linn.

- **Towards Reflection Competencies for AI Scientists: Developing a Conceptual Framework and Open Research Platform**

   Funder: Office of Naval Research (ONR)

Award number: N00014-21-1-2437.

Period of performance: June 2021 - May 2023.

Principal Investigator: Yolanda Gil.

- **Artificial Intelligence and Community Driven Wildland Fire Innovation via a WIFIRE Commons Infrastructure for Data and Model Sharing**

    Funder: National Science Foundation (NSF)

    Award number: 2040676.

    Period of performance: September 2020 - May 2021.

    Principal Investigator: PI: Ilkay Altintas; Co-PIs: Yolanda Gil, John Hiers, and Rodman Linn.

- **Automated Machine Learning for Time Series Analysis**

    Funder: JP Morgan

    Period of performance: March 2019 – February 2022.

    Principal Investigators: Yolanda Gil (PI), Deborah Khider (co-PI).

- **High Resolution Mapping of the Genetic Risk for Disease in the Aging Brain**

    Funder: National Institutes of Health (NIH)

    Award number: 1R01AG059874-01.

    Period of performance: August 2018 – November 2023.

    Principal Investigators: Neda Jahanshad (PI) and Yolanda Gil (Co-PI).

- **MINT: Model INTegration Through Knowledge-Rich Data and Process Composition**

    Funder: Defense Advanced Research Projects Agency (DARPA)

    Award number: W911NF-18-1-0027.

    Period of performance: December 2017 - November 2021.

    Principal Investigator: PI: Yolanda Gil. Co-PIs: Ewa Deelman, Craig Knoblock, Rafael Ferreira, Kelly Cobourn, Christopher Duffy, Vipin Kumar, Scott D. Peckham.

- **EarthCube Integration: ASSET: Accelerating Scientific Workflows using EarthCube Technologies**

    Funder: National Science Foundation (NSF)

    Award number: ICER-1740683.

    Period of performance: September 2017 - August 2020.

    Principal Investigator: PI: Scott D. Peckham, Yolanda Gil, Cindy Bruyere; Co-PIs: Michael D. Daniels, James Done.

- **EarthCube Data Infrastructure: A unified experimental-natural digital data system for analysis of rock microstructures**

    Funder: National Science Foundation (NSF)

    Award number: ICER-1639716.

    Period of performance: September 2017 - August 2020.

    Principal Investigator: PI: Julie Neuman, Co-PIs: Yolanda Gil, J. Douglas Walker, Philip Skemer, Matty Mookerjee, Gurman Gill, Chris J. Marone, and Basil Tikoff.

- **DSBox: Data Scientist in a Box**

    Funder: Defense Advanced Research Projects Agency (DARPA)

    Award number: FA8750-17-C-0106.

    Period of performance: March 2017 - February 2021.

    Principal Investigators: Pedro Szekely (PI), Aram Galstyan (co-PI), Yolanda Gil (Co-PI).

- **EarthCube Integrated Activities: LinkedEarth: Crowdsourcing Data Curation and Standards Development in Paleoclimatology**

    Funder: National Science Foundation (NSF)

    Award number: ICER-1541029.

    Period of performance: September 2015 - August 2019.

    Principal Investigators: Julien Emile-Geay (PI), Yolanda Gil (co-PI), Nicholas McKay (co-PI).

- **Crowdsourcing metadata for the ENIGMA neuroscience collaboration**

    Funder: The Kavli Foundation

    Period of performance: April 2017 - April 2019.

    Principal Investigators: Paul Thompson (PI), Neda Jahanshad (co-PI), Yolanda Gil (Co-PI).

- **A Discovery Engine for Reproducible and Comparable Multi-Omic Analysis**

    Funder: National Institutes of Health (NIH)

    Award number: 1R01GM117097-01.

    Period of performance: February 2016 - January 2019.

    Principal Investigator: Subcontract to Stanford University. ISI PI: Yolanda Gil.

- **Model Integration for Big Mechanism**

    Funder: Defense Advanced Research Projects Agency (DARPA)

Award number: W911NF-14-1-0364.

Period of performance: June 2016 - September 2016.

Principal Investigator: Yolanda Gil.

- **Towards Automating Discovery: Systematic Data Analysis of Science Repositories**

  Funder: Defense Advanced Research Projects Agency (DARPA)

  Award number: W911NF-15-1-0555.

  Period of performance: October 2015 - September 2017.

  Principal Investigators: Yolanda Gil (PI), Parag Mallick (co-PI), Suzanne Pierce (co-PI).

- **EarthCube Integrated Activities: Integrated GeoSciences Observatory**

  Funder: National Science Foundation (NSF)

  Award number: ICER-1540937.

  Period of performance: September 2015 - August 2017.

  Principal Investigator: Subcontract to SRI. ISI PI: Yolanda Gil.

- **Highly Interactive and Scalable Model Evaluation and Climate Metrics for the Regional Climate Model Evaluation System**

  Funder: National Aeronautics and Space Administration (NASA)

  Award number: 14-AIST-14-0034.

  Period of performance: September 2015 - February 2017.

  Principal Investigator: Subcontract to NASA/JPL. ISI PI: Yolanda Gil.

- **Intelligent Systems Research to Support Geosciences and the EarthCube Mission**

  Funder: National Science Foundation (NSF)

  Award number: IIS-1533930.

  Period of performance: February 2015 - January 2016.

  Principal Investigator: Yolanda Gil.

- **EarthCube Building Blocks: GeoSoft: Collaborative Open Source Software Sharing for Geosciences.**

  Funder: National Science Foundation (NSF)

  Award number: ICER-1440323.

  Period of performance: September 2014 - August 2018.

  Principal Investigators: Yolanda Gil (PI), Christopher Duffy (co-PI), Chris Mattmann (co-PI), Scott Peckham (co-PI), Erin Robinson (co-PI).

- **Accelerating Map of the World**

  Funder: National Geospatial-Intelligence Agency (NGA)

  Period of performance: January 2015 – September 2015.

  Principal Investigators: Subcontract to Image Matters. ISI PI: Yolanda Gil.

- **EarthCube Research Coordination Networks: iSamplES: The Internet of Samples in the Earth Sciences.**

  Funder: National Science Foundation (NSF)

  Award number: ICER-1440351.

  Period of performance: September 2014 - August 2017.

  Principal Investigator: Subcontract to Columbia University. ISI PI: Yolanda Gil.

- **Semantic Workflows and the W3C PROV Standard**

  Funder: Open Geospatial Consortium (OGC)

  Period of performance: January 2015 – June 2015.

  Principal Investigator: Yolanda Gil.

- **The Age of Water and Carbon in Hydroecological Systems: A New Paradigm for Science Innovation and Collaboration through Organic Team Science.**

  Funder: National Science Foundation (NSF)

  Award number: IIS-1344272.

  Period of performance: October 2013 – March 2018.

  Principal Investigator: Yolanda Gil (co-PI), Christopher Duffy (PI), Paul Hanson (co-PI).

- **Provenance Tracking for Integrated Geospatial Data.**

  Funder: Open Geospatial Consortium (OGC)

  Period of performance: September 2013 – August 2014.

  Principal Investigator: Yolanda Gil.

- **Learning Big Data Analytic Skills through Scientific Workflows.**

  Funder: National Science Foundation (NSF)

  Award number: ACI-1355475.

  Period of performance: September 2013 – August 2017.

  Principal Investigator: Yolanda Gil.

- **EarthCube Building Blocks: Software Stewardship for the Geosciences.**

  Funder: National Science Foundation (NSF)

Award number: ICER-1343800.

Period of performance: September 2013 - February 2016.

Principal Investigators: Yolanda Gil (PI), Christopher Duffy (co-PI), Chris Mattmann (co-PI), Scott Peckham (co-PI), Erin Robinson (co-PI)

- **A Scalable Open Source Platform for Data Processing, Archival, and Dissemination.**

  Funder: Defense Advanced Research Projects Agency (DARPA)

  Award number: FA8750-13-C-0016.

  Period of performance: December 2012 - May 2017.

  Principal Investigator: Subcontract to MDAUS. ISI PI: Yolanda Gil.

- **A Regional Climate Model Evaluation System.**

  Funder: National Aeronautics and Space Administration (NASA)

  Period of performance: January 2013 – June 2013.

  Principal Investigator: Subcontract to JPL. ISI PI: Yolanda Gil.

- **An EarthCube Community Group for Workflows for Geosciences.**

  Funder: National Science Foundation (NSF)

  Award number: EAR-1238216.

  Period of performance: April 2012 - March 2013.

  Principal Investigator: Yolanda Gil.

- **CEMSA: Complex Event Modeling Simulation and Analysis.**

  Funder: Department of Homeland Security (DHS)

  Award number: HSHQDC-10-C-00042.

  Principal Investigators: Subcontract to Lockheed Martin. ISI PI: Yolanda Gil.

- **An Analytical Framework for Provenance-Rich Social Knowledge Collection.**

  Funder: National Science Foundation (NSF)

  Award number: IIS-1117281.

  Period of performance: September 2011 - August 2014.

  Principal Investigator: Yolanda Gil.

- **Workshop on Discovery Informatics.**

  Funder: National Science Foundation (NSF)

  Award number: IIS-1151951.

  Period of performance: September 2011 - August 2012.

Principal Investigator: Yolanda Gil.

- **Extending Scientific Articles with Procedure Annotations.**

  Funder: Elsevier

  Period of performance: June 2011 - August 2011.

  Principal Investigators: Yolanda Gil (PI) and Eduard Hovy (co-PI).

- **Cybersecurity through Nimble Task Allocation: Workflow Reasoning for Mission-Centered Network Models.**

  Funder: Air Force Office of Scientific Research (AFOSR).

  Award number: FA9550-11-1-0104.

  Period of performance: June 2011 – March 2015.

  Principal Investigators: Yolanda Gil (PI).

- **Workflows Across Organizations: Design Issues.**

  Funder: National Science Foundation (NSF)

  Award number: CCF-0725332.

  Period of performance: January 2001 - March 2011.

  Principal Investigator: Yolanda Gil.

- **Semantic Workflows for the Cancer Bioinformatics Grid**

  Funder: National Cancer Institute (NIH/NCI)

  Period of performance: July 2009 - January 2010.

  Principal Investigator: Yolanda Gil (PI).

- **W-SHARING: Towards Shared Repositories of Computational Workflows**

  Funder: National Science Foundation (NSF)

  Award number: IIS-0948429.

  Period of performance: September 2009 - August 2011.

  Principal Investigators: Yolanda Gil (PI).

- **Pedflow: Workflows for Assessing Student Learning**

  Funder: National Science Foundation (NSF)

  Award number: IIS-0917328.

  Period of performance: September 2009 - August 2011.

  Principal Investigators: Jihie Kim (PI), Gisele Ragusa (co-PI), Erin Shaw (co-PI), and Yolanda Gil (co-PI).

- **Designing Scientific Software One Workflow at a Time.**

Funder: National Science Foundation (NSF)

Award number: CCF-0725332.

Period of performance: October 2007 - September 2011.

Principal Investigators: Yolanda Gil and Ewa Deelman.

- **Plato: Phased-Learning through Analyzing Teaching and Observation.**

    Funder: DARPA Bootstrapped Learning (BL) program

    Award number: HR0011-07-C-0060.

    Period of performance: August 2007-July 2011.

    Principal Investigators: Subcontract to SRI International. ISI PI: Yolanda Gil.

- **NSF Workshop on Challenges of Scientific Workflows.**

    Funder: NSF IIS.

    Award number: IIS-0629361.

    Period of performance: May 2006-May 2009.

    Principal Investigators: Yolanda Gil (PI) and Ewa Deelman (co-PI).

- **Intelligent Optimization of Parallel and Distributed Applications.**

    Funder: NSF Computer Science Research (CSR) program.

    Award number: CSR-0615412.

    Period of performance: August 2006 – September 2009.

    Principal Investigators: Mary Hall (PI), Kristina Lerman (co-PI), Ewa Deelman (co-PI), Aichiro Nakano (co-PI), Joel Saltz (co-PI).

- **MathTrust: Mathematical Analysis of Trust and Deception.**

    Funder: Air Force Office of Scientific Research (AFOSR).

    Award number: FA9550-06-1-0031.

    Period of performance: December 2005 - May 2009.

    Principal Investigators: Yolanda Gil (PI).

- **CALO-KA: Advice Taking for a Personalized Cognitive Assistant.**

    Funder: DARPA Personalized Assistants that Learn (PAL) program

    Award number: NBCHD030010.

    Period of performance: May 2003 - March 2009.

    Principal Investigator: Subcontract to SRI International. ISI co-PIs: Craig Knoblock, Jerry Hobbs, and Yolanda Gil.

- **Scalable Knowledge Discovery Through Grid Workflows.**

Funder: Air Force Research Laboratory

Award number: FA8750-06-C-0210.

Period of performance: September 2006 – December 2008.

Principal Investigator: Yolanda Gil. ISI co-PIs: Paul Cohen and Ewa Deelman.

- **C4ML: Metareasoning for Integrated Learning.**

  Funder: DARPA Integrated Learning (IL) program

  Award number: FA8650-06-C-7606.

  Period of performance: May 2006-December 2008.

  Principal Investigators: Subcontract to BBN Technologies. ISI co-PIs: Paul Cohen and Yolanda Gil.

- **Intelligent Design and Optimization of Parallel and Distributed Applications.**

  Funder: NSF Computer Science Research (CSR) program.

  Award number: CNS-0509517.

  Period of performance: July 2005 – December 2006.

  Principal Investigators: Mary Hall (PI), Kristina Lerman (co-PI), Ewa Deelman (co-PI), Aichiro Nakano (co-PI), Joel Saltz (co-PI).

- **Towards Cognitive Grids: Knowledge-Rich Grid Services for Autonomous Workflow Refinement and Robust Execution.**

  Funder: NSF Shared Cyberinfrastructure (SCI) program.

  Award number: SCI-0455361.

  Period of performance: December 2004-November 2006.

  Principal Investigators: Ewa Deelman (PI) and Yolanda Gil (co-PI).

- **JIST: Just-In-caSe just-in-Time Information Analysis.**

  Funder: Department of Defense.

  Award number: N66001-03-C-8006.

  Period of performance: December 2002 - December 2007.

  Principal Investigator: Yolanda Gil (PI).

- **The SCEC Community Modeling Environment--An Information Infrastructure for System-Level Earthquake Research.**

  Funder: National Science Foundation Information Technology Research program (NSF/ITR).

  Award number: EAR-0122464.

Principal Investigators: Grant PIs: Thomas H. Jordan (USC/SCEC), J. Bernard Minster (UCSD), Carl Kesselman (USC/ISI), Reagan Moore (SDSC). ISI co-PIs: Hans Chalupsky, Yolanda Gil, Carl Kesselman.

Period of performance: October 2001-September 2006.

- **TRELLIS: Capturing and Exploiting Semantic Relationships for Information and Knowledge Management.**

  Funder: Air Force Office for Scientific Research (AFOSR).

  Award number: F49690-00-1-0337.

  Principal Investigator: Yolanda Gil (PI).

  Period of performance: August 2000 - December 2003.

- **TEMPLE: Template Enhancement through Knowledge Acquisition.**

  Funder: DARPA Active Templates (AcT) program.

  Award number: F30602-00-2-0513.

  Principal Investigator: Yolanda Gil (PI).

  Period of performance: April 2000 - April 2003.

- **Phosphorus: A Knowledge and Experience-Based Agent Capabilities Matcher.**

  Funder: DARPA Control of Agent-Based Systems (CoABS) program.

  Award number: F30602-97-C-0068.

  Principal Investigators: Yolanda Gil (co-PI) and Robert MacGregor (co-PI).

  Period of performance: June 1999 - December 2001.

- **KASPER: Knowledge Acquisition for Solving Problems.**

  Funder: DARPA Rapid Knowledge Formation (RKF) program.

  Award number: N66001-00-C-8018.

  Principal Investigator: Yolanda Gil (ISI PI).

  Period of performance: April 2000 - February 2004.

- **KAMM: Knowledge Acquisition for Objective Grammars in MasterMind Editor.**

  Funder: Air Force Research Laboratory's Joint Defense Planner (JDP) program.

  Award number: F30602-97-C-0118.

  Principal Investigators: Yolanda Gil (co-PI) and Pedro Szekely (co-PI).

  Period of performance: April 2000 - September 2000.

- **SHERPA: Knowledge Acquisition for Large Knowledge Bases -- Integrating Problem-Solving Methods and Ontologies into Applications.**

  Funder: DARPA High Performance Knowledge Bases (HPKB) program.

  Award number: F30602-97-1-0195.

  Principal Investigators: Bill Swartout (co-PI) and Yolanda Gil (co-PI).

  Period of performance: April 1997 - April 2000.

- **INSPECT-II: An Air Campaign Planning Evaluation Aid.**

  Funder: DARPA Joint Forces Air Component Commander (JFACC) program.

  Award number: F30602-97-C-0118.

  Principal Investigators: Bill Swartout (co-PI) and Yolanda Gil (co-PI).

  Period of performance: April 1997 - September 2000.

- **Rosetta: Ontology-Based Agent Communication.**

  Funder: DARPA Information Systems Office (ISO) Technology Integration Experiment program.

  Award number: F30602-97-1-0195.

  Principal Investigators: Yolanda Gil (co-PI) and Robert MacGregor (co-PI).

  Period of performance: July 1999 - July 2000.

- **EXPECT-II: A User-Centered Environment for the Development and Adaptation of Knowledge-Based Planning Aids.**

  Funder: DARPA/Rome Planning Initiative (ARPI) program.

  Award number: DABT 63-95-C-0059.

  Principal Investigators: Yolanda Gil (co-PI) and Bill Swartout (co-PI).

  Period of performance: May 1995 - May 1999.

Publications

All publications are available from http://www.isi.edu/~gil

Edited Volumes

1. Proceedings of the First International Conference on Knowledge Capture (K-CAP 2001), Yolanda Gil, Mark Musen, and Jude Shavlik (Eds), October 21-23, 2001, Victoria, British Columbia. ACM 2001.

2. Proceedings of the 2002 International Conference on Intelligent User Interfaces (IUI 2002), Yolanda Gil and David Leake (Eds), January 13-15, 2002, San Francisco, CA, ACM, 2002.

3. Proceedings of the Second International Conference on Knowledge Capture (K-CAP 2003), John H. Gennari, Bruce W. Porter, Yolanda Gil (Eds), October 23-25, 2003, Sanibel Island, FL. ACM 2003.

4. Special Issue on e-Science, David DeRoure, Yolanda Gil, and Jim Hendler (Eds). IEEE Intelligent Systems, January 2004.

5. Proceedings of the Fourth International Semantic Web Conference (ISWC 2005), Yolanda Gil, Enrico Motta, V. Richard Benjamins, Mark A. Musen (Eds), November 6-10, 2005, Galway, Ireland. Springer 2005.

6. Proceedings of the Twenty-First National Conference on Artificial Intelligence (AAAI 2006), Yolanda Gil and Raymond Mooney (Eds), July 16-20, 2006, Boston, MA. AAAI Press, 2006.

7. Special issue with selected papers from the Fourth International Semantic Web Conference (ISWC 2005). Yolanda Gil and Enrico Motta (Eds). Journal of Web Semantics, 5(1), 2007.

8. Proceedings of the Fifth International Conference on Knowledge Capture (K-CAP 2009), Natasha Noy and Yolanda Gil (Eds), ACM Press, 2009.

9. Special Issue on "Using Provenance in the Semantic Web", Yolanda Gil and Paul Groth (Eds), Journal of Web Semantics, Vol. 9, No. 2, 2011.

10. Working Notes of the "AAAI Fall Symposium on Discovery Informatics: The Role of AI Research in Innovating Scientific Processes." Yolanda Gil and Haym Hirsh (Eds). Association for the Advancement of Artificial Intelligence, 2012.

11. Working Notes of the "AAAI Fall Symposium on Discovery Informatics: The Role of AI Research in Innovating Scientific Processes." Gully APC Burns, Yolanda Gil, Yan Liu, and Natalia Villanueva-Rosales (Eds). Association for the Advancement of Artificial Intelligence, 2013.

12. Proceedings of the "AAAI Workshop on Discovery Informatics: Scientific Discoveries Enabled by AI." Yolanda Gil and Larry Hunter (Eds). Association for the Advancement of Artificial Intelligence, 2014.

13. Proceedings of the Fifteenth International Semantic Web Conference. Paul Groth, Elena Simperl, Alasdair Gray, Marta Sabou, Freddy Lecue, Markus Krötzsch, Fabian Flöck, and Yolanda Gil. Springer Verlag, 2016.

14. Special Issue on "Geoscience Papers of the Future," Cedric David, Christopher J. Duffy, Yolanda Gil, Scott Peckham, and Karan Venayagamoorthy. Earth and Space Science, 2016.

Journal Articles

1. "Explanation-Based Learning: A Problem-Solving Perspective." Steven Minton, Jaime Carbonell, Craig Knoblock, Dan Kuokka, Oren Etzioni, and Yolanda Gil. Artificial Intelligence, Volume 40, Number 1/3, September 1989.

2. "Towards Method-Independent Knowledge Acquisition." Yolanda Gil and Cecile Paris. Knowledge Acquisition, Volume 6, Number 2, June 1994.

3. "User Studies of Knowledge Acquisition Tools: Methodology and Lessons Learned". Marcelo Tallis and Jihie Kim and Yolanda Gil. Journal of Experimental and Theoretical AI, Vol 13, pp 359-378, 2001.

4. "Mapping Abstract Workflows onto Grid Environments", Ewa Deelman, Jim Blythe, Yolanda Gil, Carl Kesselman, Gaurang Mehta, Karan Vahi, Kent Blackburn, Albert Lazzarini, Adam Arbree, Richard Cavanaugh, and Scott Koranda. Journal of Grid Computing, Vol. 1, No. 1, 2003.

5. "A Short Study on the Success of the Gene Ontology", Michael Bada, Robert Stevens, Carole Goble, Yolanda Gil, Michael Ashburner, Judith A. Blake, J. Michael Cherry, Midori Harris, and Suzanna Lewis. Journal of Web Semantics, Vol 1 (2), 2004.

6. "Pegasus: A framework for mapping complex scientific workflows onto distributed systems", Ewa Deelman, Gurmeet Singh, Mei-Hui Su, James Blythe, Yolanda Gil, Carl Kesselman, Gaurang Mehta, Karan Vahi, G. Bruce Berriman, John Good, Anastasia Laity, Joseph C. Jacob, Daniel S. Katz. Scientific Programming, Vol. 13, No. 3, 2005.

7. "Simplifying Construction of Complex Workflows for Non-Expert Users of the Southern California Earthquake Center Community Modeling Environment", P. Maechling, H. Chalupsky, M. Dougherty, E. Deelman, Y. Gil, S. Gullapalli, V. Gupta, C. Kesselman, J. Kim, G. Mehta, B. Mendenhall, T. Russ, G. Singh, M. Spraragen, G. Staples, and K. Vahi. ACM SIGMOD Record, special issue on Scientific Workflows, Vol 34 (3), September 2005.

8. "On Agents and Grids: Creating the Fabric of a New Generation of Distributed Intelligent Systems", Yolanda Gil. Journal of Web Semantics, Volume 4, Issue 2, June 2006.

9. "A Survey of Trust in Computer Science and the Semantic Web", Donovan Artz and Yolanda Gil. Journal of Web Semantics, Volume 5, Issue 2, 2007.

10. "Incorporating Tutoring Principles into Interactive Knowledge Acquisition", Jihie Kim and Yolanda Gil. International Journal of Human-Computer Studies, (65)10, October 2007.

11. "Towards Content Trust of Web Resources", Yolanda Gil and Donovan Artz. Journal of Web Semantics, Volume 5, Issue 4, December 2007.

12. "Self-Configuring Applications for Heterogeneous Systems: Program Composition and Optimization Using Cognitive Techniques". Mary Hall, Yolanda Gil, and Robert Lucas. Proceedings of the IEEE, Special Issue on Edge Computing, February 2008.

13. "Provenance Trails in the Wings/Pegasus Workflow System", Jihie Kim, Ewa Deelman, Yolanda Gil, Gaurang Mehta, Varun Ratnakar. Concurrency and Computation: Practice and Experience, Special Issue on the First Provenance Challenge, Vol 20, Issue 5, April 2008.

14. "From Data to Knowledge to Discoveries: Scientific Workflows and Artificial Intelligence." Yolanda Gil. Scientific Programming, Vol 17, No 3, 2009.

15. "High Performance Computing and Grid Computing for Integrative Biomedical Research." Tahsin Kurc, Shannon Hastings, Vijay Kumar, Stephen Langella, Ashish Sharma, Tony Pan, Scott Oster, David Ervin, Justin Permar, Sivaramakrishnan Narayanan, Yolanda Gil, Ewa Deelman, Mary Hall, Joel Saltz. Journal of High Performance Computing Applications, Vol 23, No 3, 2009.

16. "Principles for Interactive Acquisition and Validation of Workflows." Yolanda Gil, Jihie Kim, and Marc Spraragen. Journal of Experimental and Theoretical Artificial Intelligence, Vol 22, No 2, 2010.

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5. "Semantic Workflows and Provenance." Yolanda Gil. American Geophysical Union Fall Meeting, 2011. http://adsabs.harvard.edu/abs/2011AGUFMIN51D..03G (Invited).

6. "Scientific Workflows: The Key to Convergence?" Mike P. McCann, Andreas F. Hofmann, Thomas C. Harmon, and Yolanda Gil. 2012 Ocean Sciences Meeting, Salt Lake City, Utah, 19-24 February, 2012.

7. "Designing a Roadmap for Workflow Cyberinfrastructure in the Geosciences: From Big Data to the Long Tail." Chris Duffy, Yolanda Gil, Ewa Deelman, Suresh Marru, Marlon Pierce, Ibrahim Demir, and Gerry Wiener. American Geophysical Union Fall Meeting, San Francisco, CA, December 2012. (Invited).

8. "Using Semantic Workflows for Genome-Scale Analysis." Yolanda Gil, Varun Ratnakar, Ewa Deelman, and Chris Mason. International Conference on Intelligent Systems for Molecular Biology (ISMB), Long Beach, CA, 2012.

9. "Intelligent Assistance to Disseminate Best Practices and Accelerate Discoveries in Cancer Omics." Yolanda Gil, Christopher E. Mason, Christina Zheng, and Shannon McWeeney. 2013 NCI EDRN Cancer Biomarkers Bioinformatics Workshop, Pasadena, CA, 2013.

10. "Constructing Flexible, Configurable, ETL Pipelines for the Analysis of Big Data with Apache OODT." Andrew F. Hart; Chris A. Mattmann; Paul Ramirez; Rishi Verma; Paul A. Zimdars; Samuel Park; Adam Estrada; Arni Sumarlidason; Yolanda Gil; Varun Ratnakar; David Krum; Thai Phan; Ashok Meena. American Geophysical Union Fall Meeting, San Francisco, CA, December 2013.

11. "Semantic Workflows and Provenance-Aware Software." Yolanda Gil. American Geophysical Union Fall Meeting, San Francisco, CA, December 2013. (Invited).

12. "Open Science and Collaboration for Enhancing NeuroImaging Genetics through Meta-Analysis (ENIGMA) through the Organic Data Science Framework." Neda Jahanshad, Sarah Madsen, Yervand Azatian, Derrek P. Hibar, Paul M. Thompson, and Yolanda Gil. Science of Team Science Conference (SciTS), Bethesda, MD, June 2015.

13. "OntoSoft: A Software Commons for Geosciences." Yolanda Gil. American Geophysical Union Fall Meeting, San Francisco, CA, December 2015. (Invited).

14. "OntoSoft: An Ontology for Capturing Scientific Software Metadata." Yolanda Gil. American Geophysical Union Fall Meeting, San Francisco, CA, December 2015. (Invited).

15. "Informatics and Intelligent Systems for Geosciences." Yolanda Gil. American Geophysical Union Fall Meeting, San Francisco, CA, December 2015.

16. "The Geoscience Paper of the Future." Yolanda Gil. American Geophysical Union Fall Meeting, San Francisco, CA, December 2015.

17. "Intelligent Systems for Geosciences." Yolanda Gil. Annual Meeting of the Geological Society of America, Denver, CO, September 2016. (Invited).

18. "The IS-GEO Research Collaboration Network: Fostering Collaborations for Intelligent Systems Research to Support Geosciences." Yolanda Gil and Suzanne Pierce. American Geophysical Union Fall Meeting, San Francisco, CA, December 2016. (Invited).

19. "Software and Workflow Provenance: Documenting Scientific Methods." Yolanda Gil. American Geophysical Union Fall Meeting, San Francisco, CA, December 2016. (Invited).

20. "The Geoscience Paper of the Future: Best Practices for Documenting and Sharing Research from Data to Software to Provenance." Xuan Yu, Yolanda Gil, Cédric H. David, Ibrahim Demir, Bakinam T. Essawy, Robinson W. Fulweiler, Jonathan L. Goodall, Leif Karlstrom, Huikyo Lee, Heath J. Mills, Ji-Hyun Oh, Suzanne A Pierce, Allen Pope, Mimi W. Tzeng, and Sandra R. Villamizar. American Geophysical Union Fall Meeting, San Francisco, CA, December 2016.

21. "ENIGMA-ODS: A Platform for Global Neuroscience Collaborations in the ENIGMA Consortium." Agnes McMahon, Daniel Garijo, Ryan Espiritu, Faisal Rashid, MiHyun Jang, Tejal Patted, Varun Ratnakar, Yolanda Gil, Paul Thompson, and Neda Jahanshad. 2018 INCF Neuroinformatics Congress, Montreal, Canada, August 2018. **Best Poster award.**

22. "Modeling and Forecasting Armed Conflict: AutoML with Domain Expertise." Vito D'Orazio, James Honaker, Shikhar Gupta, Daniel Garijo, and Yolanda Gil. 2019 Southern Political Science Association Annual Conference, Austin, TX, January 2019.

23. "Modeling and Forecasting Political Violence: AutoML with Domain Expertise." Vito D'Orazio, James Honaker, Shikhar Gupta, Daniel Garijo, and Yolanda Gil. International Studies Association (ISA) Conference, Toronto, Ontario, March 2019.

24. "autoTS: Automated Machine Learning for Time Series Analysis." Deborah Khider, Feng Zhu, and Yolanda Gil. American Geophysical Union Fall Meeting, San Francisco, CA, December 2019.

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2. "Final Report of the W3C Provenance Incubator Group." Yolanda Gil, James Cheney, Paul Groth, Olaf Hartig, Simon Miles, Luc Moreau, and Paulo Pinheiro da Silva. World Wide Web Consortium (W3C), 2010. Available from http://www.w3.org/2005/Incubator/prov/XGR-prov-20101214/

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5. "EarthCube Report on a Workflows Roadmap for the Geosciences." Chris Duffy, Yolanda Gil, Ewa Deelman, Suresh Marru, Marlon Pierce, Ibrahim Demir, and Gerry Wiener. National Science Foundation, Arlington, VA, 2012. Available from https://sites.google.com/site/earthcubeworkflow/earthcube-workflows-roadmap

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