

# Craig A. Knoblock

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## Education

**Carnegie Mellon University**, Pittsburgh, PA, 1984-1991  
Ph.D., Computer Science, May 1991  
Thesis Title: Automatically Generating Abstractions for Problem Solving  
Advisor: Jaime G. Carbonell

**Carnegie Mellon University**, Pittsburgh, PA, 1984-1988  
M.S., Computer Science, May 1988

**Syracuse University**, Syracuse, NY, 1980-1984  
B.S., Computer Science with Honors, May 1984

## Research Positions

**Division Director, Intelligent Systems Division**, October 2017 – present  
**Research Director, Information Integration**, June 2010 – present  
**Senior Project Leader**, May 2001 – June 2010  
**Project Leader**, May 1997 – May 2001  
**Senior Research Scientist**, August 1991 – May 1997  
Information Sciences Institute  
University of Southern California

**Research Professor**, April 2006 – present  
**Research Associate Professor**, November 1998 – March 2006  
**Research Assistant Professor**, September 1991 – November 1998  
Computer Science Department  
University of Southern California

**Research Professor**, January 2014 – present  
**Affiliated Faculty Member**, 2010 – January 2014  
Spatial Sciences Institute  
University of Southern California

**Associate Director of Data Informatics**, Oct 2014 – present  
Informatics Program  
University of Southern California

**Key Investigator**, September 1996 – September 2007  
Integrated Media Systems Center  
University of Southern California

**Cofounder & Chief Scientist**, November 1999 – December 2010  
Fetch Technologies, Inc.  
Acquired by Connotate, Inc. in December, 2011

**Strategic Advisor**, June 2012 – July 2014  
**Cofounder & Chief Scientist**, November 2004 – June 2012  
Geosemble Technologies, Inc.  
Acquired by TerraGo Technologies in June 2012

## Research Interests

**Research focus:** Techniques for describing, acquiring, and exploiting the semantics of data: source modeling, schema alignment, ontology alignment, entity linking, data cleaning, information extraction, web data extraction, and combining all of these techniques to create linked data and build knowledge graphs.

## Teaching Experience

- **INF 558: Building Knowledge Graphs**  
Taught jointly with Professor Pedro Szekely, University of Southern California, Fall 2017
- **CSCI 548: Information Integration on the Web**  
Two sections taught jointly with Professor Pedro Szekely, University of Southern California, Fall 2015
- **CSCI 648: Advanced Information Integration**  
Taught jointly with Professor Jose Luis Ambite, University of Southern California, Spring 2015
- **CSCI 548: Information Integration on the Web**  
Taught jointly with Professor Jose Luis Ambite, University of Southern California, Spring 2015
- **CSCI 548: Information Integration on the Web**  
Two sections taught jointly with Professor Pedro Szekely, University of Southern California, Fall 2014
- **CSCI 599: Geospatial Data Integration**  
Taught jointly with Professor Yao-Yi Chiang, University of Southern California, Spring 2014.
- **CSCI 548: Information Integration on the Web**  
Taught jointly with Professor Pedro Szekely, University of Southern California, Fall 2013.
- **CSCI 548: Information Integration on the Web**  
Taught jointly with Professors Pedro Szekely and Jose Luis Ambite, University of Southern California, Spring 2012.
- **CSCI 599: Geospatial Data Integration**  
University of Southern California, Spring 2011.
- **Geospatial Data Integration**  
University of Trento, Italy, July 2010.
- **CSCI 548: Information Integration on the Web**  
Taught jointly with Professor Kristina Lerman, University of Southern California, Spring 2010.
- **CSCI 548: Information Integration on the Web**  
Taught jointly with Professor Kristina Lerman, University of Southern California, Spring 2009.
- **CSCI 548: Information Integration on the Web**  
University of Southern California, Spring 2008.
- **CSCI 548: Information Integration on the Web**  
University of Southern California, Fall 2006.
- **CSCI 548: Information Integration on the Web**  
University of Southern California, Spring 2005.
- **CSCI 548: Information Integration on the Web**  
University of Southern California, Spring 2004.

- **CSCI 599: Information Integration on the Web**  
University of Southern California, Spring 2003.
- **CSCI 599: Information Integration on the Web**  
University of Southern California, Spring 2002.
- **CSCI 541: Artificial Intelligence Planning**  
Taught jointly with Dr. James Blythe, University of Southern California, Fall 1998.
- **CSCI 541: Artificial Intelligence Planning**  
Taught jointly with Dr. Yolanda Gil, University of Southern California, Fall 1996.
- **CSCI 599: AI Planning Systems**  
Taught jointly with Dr. Steve Chien, University of Southern California, Fall 1992.

## Honors and Awards

- **ACM Fellow**, Association of Computing Machinery (ACM), 2017.
- **IAPR Best Paper Prize**, 2017.  
Extracting Human Settlement Footprint from Historical Topographic Map Series Using Context-Based Machine Learning  
Johannes H. Uhl, Stefan Leyk, Yao-Yi Chiang, Weiwei Duan, and Craig A. Knoblock  
8th International Conference on Pattern Recognition Systems (ICPRS-17).
- **Best Research Paper Award**, 2016.  
Unsupervised entity resolution on multi-type graphs. Linhong Zhu, Majid Ghasemi-Gol, Pedro Szekely, Aram Galstyan, and Craig A. Knoblock. International Semantic Web Conference (ISWC).
- **Best In-Use Paper Award**, 2015.  
Building and using a knowledge graph to combat human trafficking  
Pedro Szekely, Craig A. Knoblock, et al.  
14th International Semantic Web Conference (ISWC 2015).
- **Robert S. Engelmore Memorial Lecture Award**, 2014.
- **Finalist, 2nd LinkedUp Competition**, 2014  
LODStories: Learning About Art by Building Multimedia Stories  
Jianliang Chen, Yuting Liu, Dipanwita Maulik, Linda Xu, Hao Zhang, Craig A. Knoblock, Pedro Szekely and Miel Vander Sande.
- **Best In-Use Paper Award**, 2013.  
Connecting the smithsonian american art museum to the linked data cloud  
Pedro Szekely, Craig A. Knoblock, Fengyu Yang, Xuming Zhu, Eleanor Fink, Rachel Allen, and Georgina Goodlander  
Extended Semantic Web Conference (ESWC).
- **Best Research Paper Award**, 2012.  
Discovering concept coverings in ontologies of linked data sources  
Rahul Parundekar, Craig A. Knoblock, and Jose Luis Ambite  
International Semantic Web Conference (ISWC).
- **Distinguished Scientist**, Association of Computing Machinery (ACM), 2008.
- **Fellow**, Association for the Advancement of Artificial Intelligence (AAAI), 2004.
- **Best Paper Award**, IEEE/WIC International Conference on Web Intelligence (WI 2003).
- **Meritorious Service Award**, Information Sciences Institute, 1999.
- **Teaching Fellowship**, Information Sciences Institute, Fall, 1996.
- **Best Paper Award**, Canadian Artificial Intelligence Conference, 1994.
- **Graduate Fellowship**, Air Force Laboratory, 1987-1991.

- **Class Scholar**, Syracuse University, 1984.
- **Upper Division Honors**, Syracuse University, 1984.
- **Lower Division Honors**, Syracuse University, 1982.
- **Regents Scholarship**, New York State, 1980-1984.

## Invited Talks

- **Learning to Adapt to Sensor Changes and Failures**  
IJCAI Workshop on AI for Internet of Things, August 19, 2017
- **Extracting, Aligning, and Linking Data to Build Knowledge Graphs**  
1st International Workshop on Industrial Knowledge Graphs, June 25, 2017
- **Lessons Learned in Building Human-Aware Systems for Data Science**  
AAAI Workshop on Human-Aware AI, February 4, 2017
- **Aligning and Integrating Data for Building Knowledge Graphs**  
IC Academic Research Symposium, September 22, 2016
- **Creating Linked Knowledge for Cities**  
AAAI Workshop on AI for Cities, January 25, 2015
- **Creating and Using Linked Knowledge**  
Robert S. Englemore Memorial Lecture Award, IAAI, July 29, 2014  
AI2, Seattle, Wa, July 2, 2014  
University of Texas at Austin, June 10, 2014
- **Data Integration for Big Data**  
Huawei Strategy and Technology Workshop, May 13, 2013
- **The Role of Semantics in Big Data Integration**  
2013 Semantic Technology & Business Conference, June 4, 2013
- **Learning Semantics of Sources for Big Data Integration**  
Invited talk at the University of Nebraska at Lincoln, March 27, 2013  
Invited talk at the University of Nebraska at Omaha, March 28, 2013
- **Challenges to the Success of Linked Open Data** Invited talk at the Planet Data Roadmapping Workshop at the 2012 Extended Semantic Web Conference, May 30, 2012.
- **Harvesting Named Geographic Features from Raster Maps**  
Invited talk at GeoINT 2011 Symposium Interoperability Tech Talks, San Antonio, TX, Oct 18, 2011.
- **Interactive Information Integration for Network Extraction, Discovery, and Analysis**  
Invited talk at the Technology Visions for Network Extraction, Discovery, and Analysis Workshop, Vernon, NY, Sept 21, 2011.
- **A General Approach to Discovering, Registering, and Extracting Features from Raster Maps**  
Invited talk at the University of California, Santa Barbara, CA, February 3, 2011  
Invited talk at Syracuse University, Syracuse, NY, October 6, 2010  
Invited talk at Google, Inc., Mountain View, CA, August 25, 2010
- **A Reference-Set Approach to Information Extraction from Unstructured, Ungrammatical Data Sources**  
Invited talk at the University of Washington, Seattle, WA, January 21, 2011  
Invited talk at the University of Lugano, Lugano, Switzerland, July 12, 2010
- **Building Semantic Descriptions of Linked Data**  
Invited talk at the 1st International Workshop on Consuming Linked Data (COLD 2010) at the International Semantic Web Conference, 2010.  
Shanghai, China, November 8, 2010

- **Interactively Building Geospatial Mashups**  
Keynote talk at the 2nd International Workshop on New Trends in Information Integration  
Long Beach, CA, March 5, 2010
- **A General Approach to Discovering, Registering, and Extracting Features from Raster Maps**  
Invited talk at the Conference on Document Recognition and Retrieval of the IS&T/SPIE 19th Annual Symposium International Symposium on Electronic Imaging  
San Jose, CA, January 20, 2010
- **Geospatial Data Integration for High-level Fusion**  
Invited talk at the ONR Workshop Panel on Directions for Higher-Level Fusion Research: Needs and Capabilities  
Seattle, WA, July 6, 2009
- **Discovering and Building Semantic Models of Web Sources**  
Keynote address at 6th Annual European Semantic Web Conference (ESWC2009)  
Heraklion, Greece, June 3, 2009
- **Web-based Learning**  
Invited talk at the AFRL Next Generation Reasoning and Learning: Theory and Applications Workshop  
Vernon, NY, May 27, 2009
- **Exploiting Open Source Data for Imagery Understanding**  
Invited talk at NRO Tech Seminar  
Chantilly, VA, February 20, 2009
- **Automatically Discovering, Extracting and Modeling Web Sources for Information Integration**  
Invited talk at Universita degli Studi di Genova  
Genoa, Italy, December 15, 2008
- **Building Mashups by Example**  
Invited talk at Microsoft Research  
Bellevue, WA, August 1, 2008
- **Finding, Extracting, and Integrating Data from Maps**  
Invited talk at University of Nebraska  
Lincoln CSE Colloquium Series, November 29, 2007.
- **Beyond the Elves: Making Intelligent Agents Intelligent**  
Invited talk at AAAI Spring Symposium on What Went Wrong and Why  
Palo Alto, CA, March 28, 2006
- **Learning to Optimize Plan Execution in Information Agents**  
Plenary talk at the 6th International Conference on Case-Based Reasoning (ICCBR 2005)  
Chicago, IL, USA, August 25, 2005
- **Mining Data from Online and Geospatial Information Sources**  
Invited talk at National Geospatial Intelligence Agency (Oct 19, 2004), Central Intelligence Agency (Oct 19, 2004), National Security Agency (Oct 20, 2004)
- **Building Software Agents for Planning, Monitoring, and Optimizing Travel**  
Plenary talk at the Eleventh International Conference On Information Technology and Travel & Tourism  
Cairo, Egypt, January, 26, 2004
- **Deploying Information Agents on the Web**  
Plenary talk at the International Joint Conference on Artificial Intelligence (IJCAI-03)  
Acapulco, Mexico, August 15, 2003
- **Integrating Online and Geospatial Information Sources**  
Plenary talk at the Summer Assembly of the University Consortium for Geographic Information Science  
Monterey, CA, June 17, 2003

- **Information Integration on the Web**  
Invited talk at the Planet 2002 Summer School on Planning on the Web, September 2002
- **Exploring Real World Planning**  
Invited talk at the AIPS 2002 Workshop, April, 2002
- **Electronic Commerce in the Information Industries**  
Invited talk at The 36th Annual Graduate School of Library and Information Science Clinic, April 2-4, 2000
- **Abstraction and Hierarchy in Reinforcement Learning**  
Invited talk at NIPS-98 workshop, 1998

## Professional Activities

### Elected Positions

- **Past President**, International Joint Conferences on Artificial Intelligence, 2013-2015.
- **President**, International Joint Conferences on Artificial Intelligence, 2011-2013.
- **Trustee**, International Joint Conference on Artificial Intelligence, 2007-2015.
- **President**, International Conference on Automated Planning and Scheduling, 2006-2008.
- **President-Elect**, International Conference on Automated Planning and Scheduling, 2004-2006.
- **Treasurer**, Executive Council of the International Conference on Automated Planning and Scheduling, 2002-2004.
- **Executive Council Member**, AAAI, 2001-2004.

### 2017

- **Senior Program Committee**, AAAI 2017.
- **Senior Program Committee, Research Track**, International Semantic Web Conference, 2017
- **Program Committee, In-Use Track**, International Semantic Web Conference, 2017
- **Program Committee**, Extended Semantic Web Conference, 2017
- **Program Committee**, WWW 2017 Special Track on Semantics and Knowledge, 2017
- **Program Committee**, 1st International Workshop on Industrial Knowledge Graphs, 2017
- **Program Committee**, 1st Workshop on Enabling Open Semantic Science, 2017
- **Associate Editor**, Spatial Algorithms and Systems, 2017
- **Advisory Board Member**, ACM Transactions on Intelligent Systems and Technology, 2017
- **Publication Committee**, AAAI Press, 2017
- **Finance Committee**, IJCAI Inc., 2017

### 2016

- **Senior Program Committee**, IJCAI 2016
- **Senior Program Committee**, AAAI 2016
- **Program Committee**, Extended Semantic Web Conference, 2016
- **Program Committee**, International Semantic Web Conference, 2016
- **Program Committee**, 15th International Semantic Web Conference Applications Track

- **Program Co-Chair**, 5th Workshop on Knowledge Discovery and Data Mining meets Linked Open Data, 2016
- **Program Committee**, Workshop on Linked Data for Information Extraction, 2016.
- **Associate Editor**, Artificial Intelligence, 2009-2016
- **Associate Editor**, Spatial Algorithms and Systems, 2015-2016
- **Advisory Board Member**, ACM Transactions on Intelligent Systems and Technology, 2016
- **Publication Committee**, AAAI Press, 2016.
- **Finance Committee**, IJCAI Inc., 2016

## 2015

- **Senior Program Committee**, Conference on Artificial Intelligence, AI & the Web Track, 2015
- **Program Committee**, Workshop on Linked Data for Information Extraction, 2015.
- **Program Committee**, 11th International Conference on Data Integration in the Life Sciences, 2015.
- **Program Committee**, ISWC 5th International Workshop on Linked Science 2015.
- **Associate Editor**, Artificial Intelligence, 2009-2016
- **Associate Editor**, Spatial Algorithms and Systems, 2015-2016
- **Editorial Board Member**, Journal of Web Semantics, 2010-2015.
- **Advisory Board Member**, ACM Transactions on Intelligent Systems and Technology, 2015.
- **Editorial Board Member**, AAAI Press, 2015.

## 2014

- **Program Chair**, International Semantic Web Conference, In-Use Track, 2014
- **Program Committee**, Conference on Artificial Intelligence (AAAI), 2014
- **Program Committee**, AAAI Workshop on Discovery Informatics: Scientific Discoveries Enabled by AI, 2014.
- **Program Committee**, Workshop on Linked Data for Information Extraction, 2014. .
- **Student Travel Award Committee**, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, 2014.
- **Associate Editor**, *Artificial Intelligence*, 2009-2015
- **Editorial Board Member**, *Journal of Web Semantics*, 2010-2015.
- **Advisory Board Member**, *ACM Transactions on Intelligent Systems and Technology*, 2014.
- **Editorial Board Member**, *Journal on Foundations and Trends in Web Science*, 2014.
- **Editorial Board Member**, *AAAI Press*, 2014.

## 2013

- **Conference Co-Chair**, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, 2013.
- **Senior Program Committee Member**, Conference on Artificial Intelligence, AI & the Web Track, 2013
- **Program Committee**, AAAI 2013 Workshop on Semantic Cities.

- **Organizing Committee**, Tenth International Workshop on Information Integration on the Web (IIWeb 2013).
- **Program Committee**, 4th International Workshop on Consuming Linked Data, 2013.
- **Program Committee**, Extended Semantic Web Conference, Tutorials, 2013.
- **Program Committee**, Workshop on Linked Data for Information Extraction, 2013.
- **Program Committee**, ISWC 3rd Workshop on Linked Science 2013
- **Program Committee**, Semantics For Big Data, AAAI Fall Symposium 2013
- **Associate Editor**, *Artificial Intelligence*, 2009-2015
- **Editorial Board Member**, *Journal of Web Semantics*, 2010-2013.
- **Advisory Board Member**, *ACM Transactions on Intelligent Systems and Technology*, 2013.
- **Editorial Board Member**, *Journal on Foundations and Trends in Web Science*, 2013.
- **Editorial Board Member**, *AAAI Press*, 2013.

## 2012

- **Conference Co-Chair**, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, 2012.
- **Workshop Chair**, Workshop at the Extended Semantic Web Conference on Linked APIs, 2012.
- **Area Chair**, Twenty-Sixth Conference on Artificial Intelligence, 2012.
- **Organizing Committee**, Computing Community Consortium Workshop on Spatial Computing, 2012
- **Steering Committee**, AAAI 2012 Workshop on Semantic Cities.
- **Organizing Committee**, Ninth International Workshop on Information Integration on the Web (IIWeb 2012).
- **Program Committee**, Extended Semantic Web Conference, 2012.
- **Program Committee**, International Semantic Web Conference, 2012.
- **Program Committee**, Workshop on Knowledge Discovery and Data Mining Meets Linked Open Data, 2012.
- **Associate Editor**, *Artificial Intelligence*, 2009-2012
- **Editorial Board Member**, *Journal of Web Semantics*, 2010-2013.
- **Advisory Board Member**, *ACM Transactions on Intelligent Systems and Technology*, 2012.
- **Editorial Board Member**, *Journal on Foundations and Trends in Web Science*, 2012.
- **Editorial Board Member**, *AAAI Press*, 2012.

## 2011

- **Conference Chair**, International Joint Conference on Artificial Intelligence, 2011
- **Associate Editor**, *Artificial Intelligence*, 2009-2012
- **Editorial Board Member**, *Journal of Web Semantics*, 2010-2013.
- **Advisory Board Member**, *ACM Transactions on Intelligent Systems and Technology*, 2011.
- **Editorial Board Member**, *Journal on Foundations and Trends in Web Science*, 2011.
- **Editorial Board Member**, *AAAI Press*, 2011.
- **Special Issue Editor**, *Journal of Web Semantics* on Dealing with the Messiness of the Web of Data, 2011.



- **Program Committee Member**, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, 2011.
- **Steering Committee**, IIWeb 2011 : Eighth International Workshop on Information Integration on the Web, 2011.

## 2010

- **Conference Chair**, International Joint Conference on Artificial Intelligence, 2011
- **Associate Editor**, *Artificial Intelligence*, 2009-2012
- **Advisory Board Member**, *ACM Transactions on Intelligent Systems and Technology*, 2010.
- **Editorial Board Member**, *Journal of Web Semantics*, 2010-2013.
- **Editorial Board Member**, *Journal on Foundations and Trends in Web Science*, 2010.
- **Editorial Board Member**, *AAAI Press*, 2010.
- **Senior Program Committee Member**, Twenty-Fourth Conference on Artificial Intelligence, AI & the Web Special Track, 2010.
- **Program Committee Member**, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, 2010.

## 2009

- **Conference Chair**, International Joint Conference on Artificial Intelligence, 2011
- **Co-organizer**, Workshop on Information Integration on the Web, 2009.
- **Associate Editor**, *Artificial Intelligence*, 2009-2012
- **Editorial Board Member**, *Journal on Foundations and Trends in Web Science*, 2009.
- **Editorial Board Member**, *AAAI Press*, 2009.
- **Senior Program Committee Member**, Conference on Intelligent User Interfaces, 2009.
- **Program Committee Member**, Twenty-Third Conference on Artificial Intelligence, AI & the Web Special Track, 2009.
- **Program Committee Member**, International Conference on GeoSpatial Semantics, 2009.
- **Program Committee Member**, ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, 2009.

## 2008

- **Conference Chair**, International Joint Conference on Artificial Intelligence, 2011
- **Conference Co-Chair**, Twenty-Second Conference on Artificial Intelligence, AI & the Web Special Track, 2008.
- **Vice Chair**, International Semantic Web Conference, 2008.
- **Editorial Board Member**, *Journal on Foundations and Trends in Web Science*, 2008.
- **Editorial Board Member**, *AAAI Press*, 2008.
- **Senior Program Committee**, Conference on Intelligent User Interfaces, 2008.
- **Program Committee Member**, International Conference on Advances in Geographic Information Systems, 2008.
- **Program Committee Member**, Second Workshop on Analytics for Noisy Unstructured Text Data, 2008

- **Panel Member**, National Geospatial-Intelligence Agency Multi-Source, Multi-INT Fusion Panel, State College, PA, December 2-3, 2008.

## 2007

- **Conference Chair**, International Joint Conference on Artificial Intelligence, 2011
- **Senior Program Committee Member**, National Conference on Artificial Intelligence, 2007.
- **Editorial Board Member**, *Computational Intelligence*, 2005-2007.
- **Editorial Board Member**, *Journal on Foundations and Trends in Web Science*, 2007.
- **Editorial Board Member**, *AAAI Press*, 2005-2007.
- **Program Committee Member**, Workshop on Information Integration on the Web, 2007.

## 2006

- **Senior Program Committee Member**, International Joint Conference on Artificial Intelligence, 2007.
- **Senior Program Committee Member**, National Conference on Artificial Intelligence, 2006.
- **Co-organizer**, IJCAI 2007 Workshop on Analytics for Noisy Unstructured Text Data
- **Review Panel Member**, Marine Geosciences External Review of NRL's Battlespace Environments Technology S&T Program, Stennis, September 19-20, 2006.
- **Editorial Board Member**, *Computational Intelligence*, 2005-2007.
- **Editorial Board Member**, *Journal on Foundations and Trends in Web Science*, 2006.
- **Editorial Board Member**, *AAAI Press*, 2005-2007.
- **Program Committee Member**, Workshop on Information Integration on the Web, 2006.

## 2005

- **Participant**. National Academy of Sciences Workshop on Using Information Technology to Enhance Disaster Management, Washington, D.C., June 22-23, 2005.
- **Editorial Board Member**, *Computational Intelligence*, 2005-2007.
- **Founding Member**, Editorial Board for the *Journal on Foundations and Trends in Web Science*, 2005.
- **Editorial Board Member**, *AAAI Press*, 2005-2007.
- **Program Committee Member**, ACM Conference on Geospatial Information Science (ACM GIS), 2005.
- **Program Committee Member**, International Conference on Geospatial Semantics (GeoS), 2005.
- **Program Committee Member**, Workshop on Representation and Analysis of Web Space (RAWS-05), 2005.
- **Program Committee Member**, International Joint Conference on Artificial Intelligence, 2005.
- **Program Committee Member**, National Conference on Artificial Intelligence, 2005.
- **Program Committee Member**, International Conference on Automated Planning and Scheduling, 2005.
- **Editorial Board Member**, *IEEE Intelligent Systems*, 2005.

## 2004

- **Guest Editor**, Special issue of *IEEE Intelligent Systems* on Mining the Web, 19((6), November/December, 2004.
- **Senior Program Committee Member**, Semantic Web Conference, 2004
- **Senior Program Committee Member**, National Conference on Artificial Intelligence, 2004.
- **Program Committee Member**, International Conference on Automated Planning and Scheduling, 2004.
- **Program Committee Member**, 17th International FLAIRS Conference Special Track on AI and the Web, 2004.
- **Editorial Board Member**, *IEEE Intelligent Systems*, 2004.

## 2003

- **Guest Editor**, Special issue of *IEEE Intelligent Systems* on Information Integration on the Web, September, 2003.
- **Co-Chair**, IJCAI'03 Workshop on Information Integration on the Web, 2003.
- **Program Committee Member**, International Conference on Service Oriented Computing, 2003.
- **Program Committee Member**, KDD'03 Workshop on Data Cleaning, Record Linkage and Object Consolidation, 2003.
- **Program Committee Member**, ISWC'03 Semantic Integration Workshop.
- **Program Committee Member**, Conference on AI Planning and Scheduling, 2003.
- **Program Committee Member**, Conference on Innovative Applications of Artificial Intelligence, 2003
- **Editorial Board Member**, *IEEE Intelligent Systems*, 2003.

## 2002

- **Member**, Joint European-US Working Group on Information Extraction from Digital Libraries, 2002.
- **Member**, DARPA IXO panel study on Information Integration, 2002.
- **Panel Member**, Robotic, Intelligent and Information Systems Evaluation, Science and Technology Foundation, Ministry of Science and Technology, Portugal, February, 2002.
- **Program Committee Member**, Conference on Innovative Applications of Artificial Intelligence, 2002.
- **Program Committee Member**, Conference on AI Planning and Scheduling, 2002.
- **Program Committee Member**, National Conference on Artificial Intelligence, 2002.
- **Program Committee Member**, AIPS 2002 Workshop on Exploring Real-World Planning, 2002.
- **Editorial Board Member**, *IEEE Intelligent Systems*, 2002.

## 2001

- **Co-Chair**, NASA RIACS Panel on Information Management Requirements, 2001-2002.
- **Program Committee Member**, Conference on Innovation Applications of Artificial Intelligence, 2001.
- **Editorial Board Member**, *IEEE Intelligent Systems*, 2001.

## 2000

- **Program Co-Chair**, International Conference on AI Planning and Scheduling, 2000.
- **Senior Program Committee Member**, National Conference on Artificial Intelligence, 2000.
- **Editorial Board Member**, *IEEE Intelligent Systems*, 2000.

## 1999

- **Review Board Member**, Jet Propulsion Laboratory Annual Technology Program Review of the Telecommunications and Mission Operations Directorate (TMOD), 1999.
- **Reviewer**, International Joint Conference on Artificial Intelligence, 1999.
- **Publicity Chair**, Autonomous Agents, 1999.
- **Editorial Board Member**, *IEEE Intelligent Systems*, 1999.

## 1998

- **Senior Program Committee Member**, National Conference on Artificial Intelligence, 1998.
- **Co-organizer**, AAAI Workshop on AI and Information Integration at the Fourteenth National Conference on Artificial Intelligence, 1998.
- **Program Committee Member**, International Conference on Artificial Intelligence Planning Systems, 1998.
- **Program Committee Member**, International Conference on Autonomous Agents, 1998.
- **Editorial Board Member**, *IEEE Intelligent Systems*, 1998.

## 1997

- **Senior Program Committee Member**, National Conference on Artificial Intelligence, 1997.
- **Editor**, Department on Trends and Controversies for *IEEE Expert*, 1997.
- **Program Committee Member**, International Conference on Autonomous Agents, 1997.
- **Reviewer**, European Conference on Planning, 1997.
- **Editorial Board Member**, *IEEE Intelligent Systems*, 1997.
- **Editorial Board Member**, *Journal of Artificial Intelligence Research*, 1997.

## 1996

- **Editorial Board Member**, *Journal of Artificial Intelligence Research*, 1996.
- **Editor**, Department on Trends and Controversies for *IEEE Expert*, 1996.
- **Program Committee Member**, National Conference on Artificial Intelligence, 1996.
- **Reviewer**, International Conference on Artificial Intelligence Planning Systems, 1996.

## 1995

- **Editorial Board Member**, *Journal of Artificial Intelligence Research*, 1995.
- **Program Committee Member**, Conference on Artificial Intelligence Applications, 1995.
- **Program Committee Member**, Conference on Cooperative Information Systems, 1995.
- **Reviewer**, International Joint Conference on Artificial Intelligence, 1995.
- **Co-organizer**, AAAI Spring Symposium on Information Gathering from Distributed, Heterogeneous Environments, 1995.
- **Panel Member**, National Science Foundation proposal review panel, 1995.

## 1993

- **Reviewer**, International Joint Conference on Artificial Intelligence, 1993.

## 1992

- **Associate Chair**, Tenth National Conference on Artificial Intelligence, 1992.
- **Program Committee Member**, Conference on Principles of Knowledge Representation and Reasoning, 1992.

## Journal Reviewer

- *Artificial Intelligence*
- *Constraints, An International Journal*
- *Machine Learning*
- *Journal of Artificial Intelligence Research*
- *Journal of the ACM*
- *Journal of Experimental and Theoretical Artificial Intelligence*
- *Journal of Web Semantics*
- *IEEE Transactions on Knowledge and Data Engineering*
- *IEEE Transactions on Pattern Analysis and Machine Intelligence*
- *IEEE Intelligent Systems*
- *International Journal of Cooperative Information Systems*
- *Theory and Practice of Object Systems*
- *World Wide Web Journal*

## Graduated Students

- **Mohsen Taheriyani, 2015**  
Learning the Semantics of Structured Data Sources  
Ph.d., Department of Computer Science, University of Southern California, 2015  
Current position: Post-doc, University of Southern California
- **Bo Wu, 2015**  
Iteratively Learning Data Transformation Programs from Examples  
Ph.d., Department of Computer Science, University of Southern California, 2015  
Current position: Yelp.com

- **Daniel W. Goldberg, 2010**  
 Spatial Approaches to Reducing Error in Geocoded Data  
 Ph.D., Department of Computer Science, University of Southern California, 2010  
 Jointly advised with Professor John Wilson  
 Current position: Assistant Professor, Texas A&M University, College Station
- **Yao-Yi Chiang, 2010**  
 Harvesting Geographic Features from Heterogeneous Raster Maps  
 Ph.D., Department of Computer Science, University of Southern California, 2010  
 Current position: Assistant Professor, Research, Spatial Sciences, University of Southern California
- **Matthew Michelson, 2009**  
 A Reference-set Approach to Information Extraction from Unstructured, Ungrammatical Data Sources  
 Ph.D., Department of Computer Science, University of Southern California, 2009  
 Current position: Researcher, Inferlink, Inc.
- **Martin Michalowski, 2008**  
 A General Approach to Using Problem Instance Data for Model Refinement in Constraint Satisfaction Problems  
 Ph.D., Department of Computer Science, University of Southern California, 2008  
 Current position: Researcher, Adventium Labs
- **Rattapoom Tuchinda, 2008**  
 Building Mashups by Example  
 Ph.D., Department of Computer Science, University of Southern California, 2008  
 Current position: National Electronics and Computer Technology Center, Thailand
- **Snehal Thakkar, 2007**  
 A Data Integration Approach to Dynamically Fusing Geospatial Sources  
 Ph.D., Department of Computer Science, University of Southern California, 2005  
 Current position: Google, Inc.
- **Mark James Carman, 2006**  
 Learning Semantic Definitions of Information Sources on the Internet  
 Ph.D. Thesis, Department of Information and Communication Technology, University of Trento, 2006  
 Current position: Lecturer, Caulfield School of Information Technology, Monash University
- **Ching-Chien Chen, 2005**  
 Automatically and Accurately Conflating Road Vector Data, Street Maps and Orthoimagery  
 Ph.D., Department of Computer Science, University of Southern California, 2005  
 Jointly advised with Professor Cyrus Shahabi  
 Current position: Director of Research and Development, TerraGo Technologies
- **Matthew Michelson, 2005**  
 Building Queryable Datasets from Ungrammatical and Unstructured Sources  
 M.S., Department of Computer Science, University of Southern California, 2005  
 Current position: Researcher, InferLink
- **Rahul Bakshi, 2004**  
 Integrating and reasoning about online sources to accurately geocode addresses  
 M.S., Department of Computer Science, University of Southern California, 2004  
 Current position: Software Engineer, SiRF Technology
- **Greg Barish, 2003**  
 Speculative Plan execution for information agents  
 Ph.D., Department of Computer Science, University of Southern California, 2003  
 Current position: Chief Technology Officer, InferLink
- **Sheila Tejada, 2002**  
 Learning object identification rules for information integration

Ph.D., Department of Computer Science, University of Southern California, 2002  
Current position: Lecturer, University of Southern California

- **Ion Alexandru Muslea, 2002**

Active Learning with Multiple Views

Ph.D., Department of Computer Science, University of Southern California, 2002  
Current position: Research Scientist, Language Weaver

- **Naveen Ashish, 2000**

Optimizing information mediators by selectively materializing data

Ph.D., Department of Computer Science, University of Southern California, 2000  
Current Position: Research Scientist, University of Southern California

- **Jose Luis Ambite, 1998**

Planning by rewriting

Ph.D., Department of Computer Science, University of Southern California, 1998

Current Position: Project Leader and Research Assistant Professor, Informations Sciences Institute, University of Southern California

- **Chun-Nan Hsu, 1996**

Learning effective and robust semantic knowledge for database query optimization

Ph.D., Department of Computer Science, University of Southern California, 1996  
Current Position: Research Scientist, University of California at San Diego

## Publications

### Journal Articles

1. Mohsen Taheriyani, Craig A. Knoblock, Pedro Szekely, and Jose Luis Ambite. Learning the semantics of structured data sources. *Journal of Web Semantics*, 37, 2016.
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5. Yao-Yi Chiang and Craig A. Knoblock. A general approach for extracting road vector data from raster maps. *International Journal on Document Analysis and Recognition*, 16(1):55–81, 2013.
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8. Aman Goel, Matthew Michelson, and Craig A. Knoblock. Harvesting maps on the web. *International Journal on Document Analysis and Recognition*, 2010. <http://dx.doi.org/10.1007/s10032-010-0136-2>.
9. Matthew Michelson and Craig A. Knoblock. Constructing reference sets from unstructured, ungrammatical text. *Journal of Artificial Intelligence Research*, 38:189–221, 2010.
10. Daniel W. Goldberg, John P. Wilson, and Craig A. Knoblock. Extracting geographic features from the internet to automatically build detailed regional gazetteers. *International Journal of Geographic Information Science*, 2009.
11. Yao-Yi Chiang, Craig A. Knoblock, Cyrus Shahabi, and Ching-Chien Chen. Automatic and accurate extraction of road intersections from raster maps. *Geoinformatica*, 2008. <http://dx.doi.org/10.1007/s10707-008-0046-3>.

12. Ching-Chien Chen, Craig A. Knoblock, and Cyrus Shahabi. Automatically and accurately conflating raster maps with orthoimagery. *Geoinformatica*, 12(3):377–410, 2008. <http://dx.doi.org/10.1007/s10707-007-0033-0>.
13. Jim Blythe, Dipsy Kapoor, Craig A. Knoblock, Kristina Lerman, and Steven Minton. Information integration for the masses. *Journal of Universal Computer Science*, 14(11):1811–1837, 2008.
14. Daniel W. Goldberg, John P. Wilson, Craig A. Knoblock, Beate Ritz, and Myles G Cockburn. An effective and efficient approach for manually improving geocoded data. *International Journal of Health Geographics*, 7(60), 2008. doi:10.1186/1476-072X-7-60.
15. Matthew Michelson and Craig A. Knoblock. Creating relational data from unstructured and ungrammatical data sources. *Journal of Artificial Intelligence Research (JAIR)*, 31:543–590, 2008.
16. Greg Barish and Craig A. Knoblock. Speculative plan execution for information gathering. *Artificial Intelligence*, 172(4-5):413–453, 2008. <http://dx.doi.org/10.1016/j.artint.2007.08.002>.
17. Craig A. Knoblock, Jos Luis Ambite, Kavita Ganesan, Maria Muslea, Steven Minton, Greg Barish, Evan Gamble, Claude Nanjo, Kane See, Cyrus Shahabi, , and Ching-Chien Chen. Entitybases: Compiling, organizing and querying massive entity repositories. In *International Conference on Artificial Intelligence (ICAI'07)*, Las Vegas, Nevada, USA, June 2007.
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28. Naveen Ashish, Craig A. Knoblock, and Cyrus Shahabi. Selectively materializing data in mediators by analyzing user queries. *International Journal of Cooperative Information Systems*, 11(1), March, 2002.
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36. Chun-Nan Hsu and Craig A. Knoblock. Discovering robust knowledge from databases that change. *Data Mining and Knowledge Discovery*, 2(1), 1997.
37. Yigal Arens, Craig A. Knoblock, and Wei-Min Shen. Query reformulation for dynamic information integration. *Journal of Intelligent Information Systems*, Special Issue on Intelligent Information Integration, 6(2/3):99-130, 1996.
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  11. Kristina Lerman, Steven N. Minton, and Craig A. Knoblock. Machine learning techniques for web wrapper maintenance. In Goran D. Putnik and Maria Manuela Cunha, editors, *Virtual Enterprise Integration: Technological and Organizational Perspectives*, pages 334–350. Idea Group Publishing, Hershey, PA, 2005.
  12. Craig A. Knoblock, Kristina Lerman, Steven Minton, and Ion Muslea. Accurately and reliably extracting data from the web: A machine learning approach. In Piotr S. Szczepaniak, Javier Segovia, Janusz Kacprzyk, and Lotfi A. Zadeh, editors, *Intelligent Exploration of the Web*, pages 275–287. Springer-Verlag, Berkeley, CA, 2003.
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  14. Craig A. Knoblock and Jose-Luis Ambite. Agents for information gathering. In J. Bradshaw, editor, *Software Agents*. AAAI/MIT Press, Menlo Park, CA, 1997.
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  18. Jaime Carbonell, Oren Etzioni, Yolanda Gil, Robert Joseph, Craig Knoblock, Steven Minton, and Manuela Veloso. Planning and learning in PRODIGY: Overview of an integrated architecture. In Ashwin Ram and David B. Leake, editors, *Goal-Driven Learning*, chapter 11, pages 297–306. MIT Press, Cambridge, MA, 1995.
  19. Jaime G. Carbonell, Craig A. Knoblock, and Steven Minton. PRODIGY: An integrated architecture for planning and learning. In Kurt VanLehn, editor, *Architectures for Intelligence*. Erlbaum, Hillsdale, NJ, 1990.

20. Craig A. Knoblock. A theory of abstraction for hierarchical planning. In D. Paul Benjamin, editor, *Change of Representation and Inductive Bias*. Kluwer, Boston, MA, 1990.
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## Magazine Articles

1. Craig A. Knoblock and Pedro Szekely. Exploiting semantics for big data integration. *AI Magazine*, 2015.
2. Craig A. Knoblock. Reduce data overload. *Earth Imaging Journal*, pages 28–30, March/April 2012.
3. Craig A. Knoblock, Jose Luis Ambite, Mark Carman, Matthew Michelson, Pedro Szekely, and Rattapoom Tuchinda. Beyond the elves: Making intelligent agents intelligent. *AI Magazine*, 29(2):33–42, 2008.
4. Martin Michalowski, Snehal Thakkar, and Craig A. Knoblock. Automatically utilizing secondary sources to align information across data sources. *AI Magazine, Special Issue on Semantic Integration*, 26(1), 2005.
5. Jose Luis Ambite, Craig A. Knoblock, Maria Muslea, and Steven Minton. Heracles ii: Conditional constraint networks for interleaved planning and information gathering. *IEEE Intelligent Systems*, 20(2):25–33, March/April 2005.
6. Martin Michalowski, Jos Luis Ambite, Snehal Thakkar, Rattapoom Tuchinda, Craig A. Knoblock, and Steve Minton. Retrieving and semantically integrating heterogeneous data from the web. *IEEE Intelligent Systems*, 19(3), 2004.
7. Craig A. Knoblock. Agents for gathering, integrating, and monitoring information for travel planning. *IEEE Intelligent Systems*, 17(6), November/December 2002.
8. Hans Chalupsky, Yolanda Gil, Craig A. Knoblock, Kristina Lerman, Jean Oh, David V. Pynadath, Thomas A. Russ, and Milind Tambe. Electric elves: Agent technology for supporting human organizations. *AI Magazine*, 23(2):11–24, Summer 2002.
9. David N. Allsopp, Patrick Beautement, Michael Kirton, Jeffrey M. Bradshaw, Niranjana Suri, Edmund H. Durfee, Craig A. Knoblock, Austin Tate, and Craig W. Thompson. Coalition agents experiment: Multiagent cooperation in international coalitions. *IEEE Intelligent Systems*, 17(3):26–35, May/June 2002.
10. Craig A. Knoblock, Kristina Lerman, Steven Minton, and Ion Muslea. Accurately and reliably extracting data from the web: A machine learning approach. *IEEE Data Engineering Bulletin*, 23(4), December 2000.
11. Craig A. Knoblock and Steven Minton. The ariadne approach to web-based information integration. *IEEE Intelligent Systems*, 13(5), September/October 1998.
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2. T. K. Satish Kumar, Hong Xu, Zheng Tang, Anoop Kumar, Craig Milo Rogers, and Craig A. Knoblock. A distributed logical filter for connected row convex constraints. In *Proceedings of the 29th IEEE International Conference on Tools with Artificial Intelligence (ICTAI)*, 2017.
3. Johannes Uhl, Stefan Leyk, Yao-Yi Chiang, Weiwei Duan, and Craig A. Knoblock. Extracting human settlement footprint from historical topographic map series using context-based machine learning. In *8th International Conference on Pattern Recognition Systems, At Madrid, Spain, Volume: 8*, 2017.
4. Craig A. Knoblock, Pedro Szekely, Eleanor Fink, David Newbury Duane Degler, Robert Sanderson, Kate Blanch, Sara Snyder, Nilay Chheda, Nimesh Jain, Ravi Raju Krishna, Nikhila Begur Sreekanth, and Yixiang Yao. Lessons learned in building linked data for the american art collaborative. In *ISWC 2017 - 16th International Semantic Web Conference*, 2017.
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11. Christian Paul, Achim Rettinger, Aditya Mogadala, Craig A. Knoblock, and Pedro Szekely. Efficient graph-based document similarity. In *The Semantic Web. Latest Advances and New Domains. 13th Extended Semantic Web Conference (ESWC), Crete, Greece.*, 2016.
12. Bo Wu and Craig A. Knoblock. Maximizing correctness with minimal user effort to learn data transformations. In *Proceedings of the 21st International Conference on Intelligent User Interfaces*, 2016.
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15. Craig A. Knoblock and Pedro Szekely. A scalable architecture for extracting, aligning, linking, and visualizing multi-int data. In *Proceedings of the Conference on the Next Generation Analyst III*. SPIE, 9499, 2015.
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39. Shubham Gupta and Craig A. Knoblock. Building geospatial mashups to visualize information for crisis management. In *Proceedings of the 7th International Conference on Information Systems for Crisis Response and Management*, 2010.
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60. Craig A. Knoblock. Integrating planning and execution for information gathering. In *Working Notes of the AAAI Spring Symposium on Information Gathering in Distributed Heterogeneous Environments*, Palo Alto, CA, 1995.
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65. Craig A. Knoblock. Applying a general-purpose planner to the problem of query access planning. In *Proceedings of the AAAI Fall Symposium on Planning and Learning: On to Real Applications*, New Orleans, La, 1994.
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74. Craig A. Knoblock. Automatically generating abstractions for planning. In *Proceedings of the First International Workshop on Change of Representation and Inductive Bias*, Briarcliff, NY, 1988.
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## Demonstration Papers

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2. Yao-Yi Chiang, Sima Moghaddam, Sanjauli Gupta, Renuka Fernandes, and Craig A. Knoblock. From map images to geographic names. In *Proceedings of the 22nd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, 2014.
3. Yao-Yi Chiang, Bo Wu, Akshay Anand, Ketan Akade, and Craig A. Knoblock. A system for efficient cleaning and transformation of geospatial data attributes. In *Proceedings of the 22nd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, 2014.
4. Craig A. Knoblock, Pedro Szekely, Shubham Gupta, Animesh Manglik, Ruben Verborgh, Fengyu Yang, and Rik Van de Walle. Publishing data from the Smithsonian American Art Museum as linked open data. In *Proceedings of the ISWC 2013 Posters & Demonstrations Track*, pages 129–132, 2013.

## Selected Technical Reports

1. Jose-Luis Ambite, Yigal Arens, Naveen Ashish, Chin Y. Chee, Chun-Nan Hsu, Craig A. Knoblock, Wei-Min Shen, and Sheila Tejada. *The SIMS manual: Version 1.0*. Technical Report ISI/TM-95-428, University of Southern California, Information Sciences Institute, 1995.
2. Craig A. Knoblock. *Automatically Generating Abstractions for Problem Solving*. Ph.D. Thesis, School of Computer Science, Carnegie Mellon University, Pittsburgh, PA, 1991.
3. Steven Minton, Craig A. Knoblock, Daniel R. Kuokka, Yolanda Gil, Robert L. Joseph, and Jaime G. Carbonell. *PRODIGY 2.0: The manual and tutorial*. Technical Report CMU-CS-89-146, School of Computer Science, Carnegie Mellon University, Pittsburgh, PA, 1989.

## Tutorials

1. ***Information Integration on the Web***  
Craig Knoblock and Subbarao Kambhampati  
Tutorial Program, Twenty-Second National Conference on Artificial Intelligence  
July 22, 2007
2. ***Planning on the Web***  
Craig Knoblock and Jose Luis Ambite  
Tutorial Program, Fourteenth International Conference on Automated Planning and Scheduling  
June 3, 2004
3. ***Information Integration on the Web***  
Craig Knoblock and Subbarao Kambhampati  
Tutorial Program, Eighteenth National Conference on Artificial Intelligence  
July 29, 2002
4. ***Planning and Plan Execution for Information Gathering***  
Tutorial Program, PLANET International Summer School on AI Planning  
September 16-22, 2002 Halkidiki, Greece
5. ***Recent Advances in AI Planning***  
Co-taught with Subbarao Kambhampati  
Tutorial Program, Fifteenth National Conference on Artificial Intelligence, 1998.
6. ***Information Gathering and Integration***  
Co-taught with Alon Halevy  
Tutorial Program, Thirteenth National Conference on Artificial Intelligence, 1996.

## Grants, Contracts, & Gifts

1. **Co-Principal Investigator**, *MINT: Model INTeGration through Knowledge-Rich Data and Process Composition*, DARPA, \$12,979,881, December 2017.
2. **Principal Investigator**, *Exploiting Context in Cartographic Evolutionary Documents to Extract and Build Linked Spatial-Temporal Datasets*, National Science Foundation, \$642,959, August 2016.
3. **Principal Investigator**, *Automatic Alignment of Design Semantics to Enable Mapping Between CAD Systems*, DARPA, \$120,000, September 2016.
4. **Co-Principal Investigator**, *Effectively Forecasting Evolving Cyber Threats*, IARPA, \$6,476,872, July 2016.
5. **Principal Investigator**, *American Art Collaborative's (AAC) Linked Open Data (LOD) Initiative*, Mellon Foundation (subcontract via Smithsonian American Art Museum), \$100,000, July 2016.
6. **Principal Investigator**, *Large-scale Database Construction of Firms, Organizational Form, Competition, and Industry Change*, National Science Foundation, \$250,000, March 2016.



7. **Principal Investigator**, *Phase 1 of the American Art Collaborative Linked Open Data Initiative*, Institute of Museum and Library Services (subcontract via Crystal Bridges Museum of American Art), \$50,000, January 2016.
8. **Principal Investigator**, *Probabilistic Representation of Intent Commitments to Ensure Software Survival*, DARPA (subcontract via Charles River Associates), \$1,294,800, November 2015.
9. **Principal Investigator**, *Organizing Data for Effective End-User Management*, U.S. Government, \$225,000, August 2015.
10. **Principal Investigator**, *Scalable Coordinated Human-centered Automated Resilient Planning*, DARPA (subcontract via Next Century), \$3,425,000, August 2015.
11. **Co-Principal Investigator**, *Domain-Specific Insight Graphs*, DARPA, \$8,400,000, September 2014.
12. **Co-Principal Investigator**, *Text and Symbol Recognition from Historical Maps, Conveyancing Liability Solutions*, \$120,000, September 2014.
13. **Principal Investigator**, *Creating Linked Open Data About Conflict Indicators for Peacebuilding*, Center for Global Health and Peacebuilding, \$100,000, July 2014.
14. **Principal Investigator**, *Extracting and Integrating User Generated Content*, National Geospatial-Intelligence Agency (subcontract via SRI), \$100,000, October 2014.
15. **Principal Investigator**, *Integrating and Visualizing Diverse Sources of Network Data, Phase II*, Air Force Research Lab (via Northrup Grumman), \$35,000, April 2014.
16. **Principal Investigator**, *Building Integration Tools for Complex Domains*, IARPA (via CUBRC), \$75,000, January 2014.
17. **Principal Investigator**, *Integrating Heterogeneous Sources in a Geospatial Framework to Support Oil Field Operations*, Chevron, \$116,000, January 2014.
18. **Principal Investigator**, *Semantic Alignment to Integration Data*, US Government, \$340,000, November 2013.
19. **Principal Investigator**, *Integrating and Visualizing Diverse Sources of Network Data*, Air Force Research Lab (via Northrup Grumman), \$125,000, October 2013.
20. **Principal Investigator**, *A Unified Approach to Information Integration and Data Mining on Large, Heterogeneous Data Sources*, Huawei Technologies, \$130,000, September 2013.
21. **Principal Investigator**, *Harvesting Geographic Information from Heterogeneous Raster Maps*, TerraGo Technologies, \$75,000, August 2013.
22. **Principal Investigator**, *Integrating Heterogeneous Sources in a Geospatial Framework to Support Oil Field Operations*, Chevron, \$110,000, January 2013.
23. **Principal Investigator**, *U.S. Based Students Travel Support for the ACM SIGSPATIAL 2013*, NSF, \$30,000, August 2013.
24. **Principal Investigator**, *Organizing and Linking Art Museum Information*, Smithsonian American Art Museum, \$200,000, April 2012.
25. **Principal Investigator**, *Integrating Heterogeneous Sources in a Geospatial Framework to Support Oil Field Operations*, Chevron, \$145,000, January 2012.
26. **Co-Principal Investigator**, *Geospatial Analysis of Motion-Based Intelligence Tracking*, Office of Naval Research, \$2,520,000, December 2011.
27. **Principal Investigator**, *Building Linked Open Services from Online Sources*, NSF, \$516,000, October 2011.
28. **Principal Investigator**, *Integrating Heterogeneous Sources in a Geospatial Framework to Support Oil Field Operations*, Chevron, \$96,000, January 2011.
29. **Principal Investigator**, *Domain Vocabulary from Extraction, Transduction, and Auto Induction of Layout (DOVETAIL)*, IARPA, (subcontract from SRI), \$2,307,822, October 2010.

30. **Principal Investigator**, *An Integrated Framework for Geospatial Data Fusion*, DOD, \$300K, August 2010.
31. **Principal Investigator**, **Building Mashups for Decision Making**, DARPA, \$150,000, April 2010.
32. **Principal Investigator**, *Integrating Heterogeneous Sources in a Geospatial Framework to Support Oil Field Operations*, Chevron, \$150,000, January 2010.
33. **Principal Investigator**, *Harvesting Named Geographic Features from Raster Maps*, DOD, \$300,000, October 2009.
34. **Co-Principal Investigator**, *Automation of Technical Reachback for PMESII Best Practices*, OSD STTR Phase I Project (subcontract from Securboratorion), \$100,000, February 2009.
35. **Co-Principal Investigator**, *Trend Analysis and Data Mining for Finding Suspicious Entities*, AFRL STTR Phase II Project (subcontract from Fetch Technologies), \$750,000, November 2008.
36. **Co-Principal Investigator**, *Rapid engagement of humanitarian assistance social networks for ad hoc geospatial data sharing*, National Science Foundation, \$450,000, September 2008.
37. **Principal Investigator**, Sapling Effort on Information Integration, DARPA, \$500,000, November 2007.
38. **Co-Principal Investigator** *Exploiting Raster Maps for Imagery Analysis*, AFOSR STTR Phase II Project (subcontract from Geosemble Technologies), \$742,000, October 2007.
39. **Co-Principal Investigator** *Trend Analysis and Data Mining for Finding Suspicious Entities*, AFRL STTR Phase I Project (subcontract from Fetch Technologies), \$100,000, October 2007.
40. **Principal Investigator**, *Geospatial Information Integration and Visualization for Oil Field Operation and Exploration*, Chevron, \$275,000, September 2007.
41. **Principal Investigator**, *Interleaved Information Gathering and Reasoning for Information Fusion*, AFOSR, \$740,000, April 2007.
42. **Principal Investigator**, *Integrating Online Maps with Aerial Imagery*, Microsoft Research, \$40,000, March 2007.
43. **Co-Principal Investigator**, *Exploiting Raster Maps for Imagery Analysis*, AFOSR STTR Phase I Project (subcontract from Geosemble Technologies), \$100,000, September 2006.
44. **Co-Principal Investigator**, *GeoDec: Geospatial Decision Making*, Microsoft Research, \$40,000, January 2006.
45. **Co-Principal Investigator**, *Accurate and Rapid Construction of Information-Rich 3-D City Models*, Microsoft Research, \$100,000, October 2005.
46. **Principal Investigator**, *PSYOP Global Reach*, Institute for Creative Technologies \$200,000, October 2005.
47. **Principal Investigator**, *EntityBases: Large-scale Knowledge Bases for Intelligence Data*, AFRL, \$3,450,000, April 2005.
48. **Principal Investigator**, *Constraint-based Integration of Geospatial and Online Sources*, Institute for Creative Technologies, \$501,000, March 2004.
49. **Principal Investigator**, *A Framework for Integrating Geospatial and Online Data to Respond to Unexpected Events*, NSF ITR Grant, \$1,180,000, October 2003.
50. **Principal Investigator**, *Enduring Personal Cognitive Assistant*, DARPA PAL Program (subcontract from SRI), \$3,125,000, May 2003.
51. **Co-Principal Investigator**, *Proteus: A System for Execution of Dynamically Composed Web Services Using GXA*, Microsoft, \$350,000, January 2003.
52. **Co-Principal Investigator**, *Machine Learning for Record Linkage II*, AFOSR STTR Phase II (subcontract from Fetch Technologies), \$173,000, September 2002.

53. **Principal Investigator**, *Efficiently Accessing and Integrating Worldwide Geographic Data (Tera-World)*, AFOSR DURIP equipment grant, \$208,000, April 2002.
54. **Co-Principal Investigator**, *Composing Web Sources Using a Scalable .Net Middleware*, Microsoft, \$200,000, January 2002.
55. **Co-Principal Investigator**, *Machine Learning for Record Linkage (ML-Link)*, AFOSR STTR Phase I project (subcontract from Fetch Technologies), \$36,000, October 2001.
56. **Principal Investigator**, *WIDELink: A Bootstrapping Approach to Identifying, Modeling, and Linking On-Line Data Sources*, DARPA Evidence Extraction and Link Discovery Program, \$1,485,000, September 2001.
57. **Principal Investigator**, *Rapidly Building High-Performance Information Agents*, AFOSR, \$780,000, December 2000.
58. **Principal Investigator**, *Active Template Reasoning and Optimization*, DARPA Active Templates Program, \$3,911,500, April 2000.
59. **Co-Principal Investigator**, *Agents for Plan Management*, DARPA Cooperative Agent-Based Systems Program, \$2,102,000, July 1998.
60. **Principal Investigator**, *Intelligent Agents for Retrieving, Filtering, and Managing Information*, AFOSR, \$985,000, October 1997.
61. **Co-Principal Investigator**, *A Portable SIMS System for Integrating Inconsistent and Partial Information Sources*, DARPA Intelligent Information Integration Program, \$1,867,000, October 1997.
62. **Co-Principal Investigator**, *Information Integration for Battlefield Awareness*, DARPA Battlefield Awareness and Data Dissemination Program, 750,000, June 1997.
63. **Co-Principal Investigator**, *SIMS for Dealmaker*, DARPA Advanced Logistics Program, \$544,000, August 1996.
64. **Co-Principal Investigator**, *SIMS II: Single Interface to Multiple Sources of Incomplete Information*, ARPA Intelligent Integration of Information Program, \$1,200,000, March 1994.
65. **Principal Investigator**, *Learning and Reformulation for Efficient Multidatabase Retrieval*, National Science Foundation Database and Expert Systems Program, \$259,000, September 1993.
66. **Principal Investigator**, *Building Information Servers*, DARPA Augmentation Award for Science and Engineering Research Training, \$139,000, March 1993.

## Patents

- **Dynamically linking relevant documents to regions of interest**  
Cyrus Shahabi, Craig A. Knoblock, Dipsy Kapoor, Ching-Chien Chen  
US Patent No. 8,340,360, 2013
- **System and method for fusing vector data with imagery**  
Ching-Chien Chen, Dipsy Kapoor, Craig A. Knoblock, Cyrus Shahabi  
US Patent No. 8,340,360, 2012
- **System and Method for Fusing Geospatial Data**  
Ching-Chien Chen, Craig A. Knoblock, Cyrus Shahabi, and Yao-Yi Chiang  
US Patent No. 7,660,441, 2010
- **Performing Predictive Pricing Based on Historical Data**  
Oren Etzioni, Alexander Yates, Craig A. Knoblock, and Rattapoom Tuchinda  
US Patent No. 8,566,143, 2013  
US Patent No. 7,974,863, 2011  
US Patent No. 7,346,520, 2008  
US Patent No. 7,010,494, 2006

- **Wrapper Induction by Hierarchical Data Analysis**  
Ion Muslea, Steven Minton, and Craig A. Knoblock  
US Patent No. 6,606,625, 2003

## Patents Pending

- Processing Time-based Geospatial Data  
US Patent Application Number: 20110142347
- Precisely Locating Features on Geospatial Imagery  
US Patent Application Number: 20110007941
- Systems and methods for linking content to individual image features  
US Patent Application Number: 20090285487