Judith Gelernter, PhD

tel: 631.219.3834
email: gelern@comminfo.rutgers.edu

Education

Rutgers University	Communication & Info science	Ph.D., 2008
Simmons College	Information science	M.I.L.S., 1994
Harvard University	Fine arts	A.M., 1992
Yale University	Medieval history	B.A., 1989, *magna cum laude*

Experience

<u>Rutgers University</u>**,** School of Communication and Information, New Brunswick, NJ

Research scientist (affiliation), December 2018 – present

<u>National Institute of Standards and Technology</u>**,** Information Technology Lab, MD

Research scientist, April 2015–August 2018
Research projects in cartography and indoor mapping and cyberphysical systems

<u>Language Analytics Partners</u>**,** LLP, PA

Independent consultant, December 2014–April 2015
Provided company with our geolocation algorithm that handles non-standard grammar and extracts location, and soon also, time
[https://github.com/geoparser/geolocator/blob/master/README.md]

<u>Carnegie Mellon</u>**,** Language Technologies Institute, School of Computer Science, PA

Associate Scientist, July 2013–December 2014
Applied Machine Learning to Natural Language Processing tasks. Emphasis given to designing a cross-lingual system to extract concepts in multiple languages. My lab in fall 2014 had 9 people, 7 of which were advanced computer science undergraduate and graduate students, and 2 of which were PhDs.

Project Scientist, July 2011–2013
Did research in geolocation, and established an additional specialty in cognitive systems to improve human attention owing to grant success in both areas. Expanded my own geo-lab to several computer science students.

Independent Research Postdoctoral Fellowship, October 2008–July 2011
Established a research area in Machine Learning methods for Natural Language Processing questions that were often in geolocation.

<u>Rutgers University</u>, School of Communication and Information, New Brunswick, NJ

Research Assistant, fall 2007–spring 2008 [dissertation research]
Teaching Assistant, fall 2005–spring 2007 [this was independent teaching]
Taught courses in classification methods, indexing, as well in data organization and archiving.

<u>Knowledge Edge</u>, New York, NY Information Systems Consultancy
Principal, 2004–2006

Advised and sometimes set up information systems for schools and libraries that reduced in-house effort and improved services for students and patrons.

<u>Union Club of the City of New York</u>, NY
Art Curator and Director of the Library, 1997-2004

Set up an information system to keep track of art description, location and insurance, and organized the art lecture series. Similarly, set up an information system for the library, and took responsibility for acquisitions and buget.

<u>Dance Notation Bureau Research Library and Archive</u>, NY
Archivist, 1994-1997

Information systems and services

Funding and honors

Public Safety Communications Research (PSCR), Winter 2016–Summer 2017   Principal Investigator (PI): Judith Gelernter**. Indoor mapping for public safety**

National Institutes of Health (NIH): National Cancer Institute Winter 2016– Winter 2017 Ontology integration for medical researchers. PI: Judith Gelernter.

Army Research Lab. Research directions for video access. May–June 2015. PI: Judith Gelernter

USG. United States Government Agency.   Geolocation. October 2013—September 2014. PI: Judith Gelernter

XSEDE, supported by National Science Foundation award number OCI-1053575, Allocation on Blacklight SGI Altix UV Supercomputer.   PI: Judith Gelernter April 2013—March 2014

ARL/ARO (Army Research Laboratory/Army Research Office): Network Sciences Division. Mapping Social Media Messages 62308-NS-II.   July 2012— August 2013 PI: Judith Gelernter

DARPA (Defense Advanced Research Projects Agency) Network Sciences Division. U.S. Army Research Office contract W911NF-12-C-0043. Social Media in Strategic Communications Research. PI: Mark Luettgen, Systems Technology Research. June 2012— September 2013 Subcontract: Judith Gelernter

ARL/ARO (Army Research Office/Army Research Office): Make fewer mistakes: Spot rare occurrences more of the time by lessening inattentional blindness. Proposal No 60355-LS-II. February 2012—February 2013   PI: Judith Gelernter

IARPA Metaphor. W911NF12C0020   Principal Investigator Jaime Carbonell, January 2012– December 2013.

NSF Allocation Grant at the Pittsburgh Supercomputer Center, Project title: Extracting Knowledge from Microtext, Number: IRI120002, October 2011– October 2012 PI: Judith Gelernter

Berkman Faculty Grant, School of Computer Science, Carnegie Mellon University, April 2011. Project title: Correcting for human mistakes: Improving awareness by lessening inattentional blindness   PI: Judith Gelernter

Best Fast Forward Presentation. ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Irvine, CA, November 5-7, 2008

Mobile Knowledge, Academic Excellence Fund, Rutgers University. M. Lesk, K. Ozbay and C. Rose, July 2007–June 2008. [Supported my dissertation research]

Institute for Scientific Information Scholarship, spring 2006 grant for tuition support

LSTA Technology Grant, spring 2001

Gadd/Merrill Endowment Grant, winter 1996

Simmons College Scholarship, fall 1993 grant for tuition support

Mellon Grant, spring 1992 grant for travel support

Harvard University Full Tuition Scholarship, fall 1989–spring 1992 grant for tuition support

Teaching

Courses prepared to teach within 6 months

Scientific and medical writing

Academic speaking and presentation

Information literacy

Information visualization and cartography

Data curation and management

Courses taught at Rutgers (2005—2007) and Carnegie Mellon University (2011)

Introduction to Geoinformatics, Carnegie Mellon, 2011 (Computational geo-information)

Graduate and undergraduate course [67-333], Information Systems Department

Physical and Digital preservation Rutgers University, 2006 (Data management)

Created syllabus, lectures, and exams for this graduate level course

Metadata Rutgers University, 2005–2007 (Info cataloging, indexing, and organization)

Created syllabus, lectures, exams and term projects for this graduate level course

Mentoring and collaborative research

National Institute of Standards and Technology (NIST) (2015—2017)

Graduate students

Nishith Maheshwari, 2016–2017, IIIT Hyderabad, India, geospatial computing

Olivera Kotevska, October 2015– Spring 2016, University of Grenoble, France, Cyber Physical Systems

Undergraduate students

Jyoti Jha, March 2015—February 2017, IIT Hyderabad, India, ontology alignment

Neha Pande, winter-spring 2016, International Institute of Information Technology, Hyderabad (IIITH) –geospatial computing

School of Computer Science, Carnegie Mellon, (2008—2015) and NIST (2015—2017)

Worked with undergraduate, graduate students and doctoral fellows on research projects and developing proof-of-concept prototypes.

PhDs and Postdoctoral Fellows

Xu Chen, November 2013–November 2014, Research Scholar LTI who is a Computer Science Associate Professor, Wuhan University in China, cross-language processing

Graduate students

Chaitra Radhakrishna, June 2013–spring 2015, Research Scholar LTI, Metaphor visualization, data mining and Named Entity Recognition

Han Michael Zhang, August 2014– December 2014, Masters student LTI, Machine learning and geolocation

Manu C.G. Gowda, May 2014–December 2014, Masters research, Indian Institute of Technology (IIT), Kanpur, India, Code switching

Wei Zhang, 2012–2014, Masters student LTI, Machine learning and geolocation

Priyank Mathur, 2013, Masters student, Heinz College, Information visualization

Haibo Wang, 2013, Masters student LTI, Toponym disambiguation

Chirayu Wongchokprasitti, 2012–2013, Doctoral student, University of Pittsburgh, Social networking and geo-location

Shuguang Han, 2012, Masters student, University of Pittsburgh, Geoparsing

Gang Wu, 2012, Masters student, University of Pittsburgh, Geoparsing

Dong Cao, 2008 – 2010, Doctoral student LTI, Data mining – Awarded PhD spring 2011

Undergraduate students

Shubham Sharma, December 2014—April 2015   Indian Institute of Technology (IIT), Varanasi, India

Anupama Gupta, 2015, IIT Allahabad, India, synonym clustering

Osho Gupta, October 2013–February 2015, Indian Institute of Technology (IIT), Varanasi, India, temporal data mining

Nishtha Jain, June 2014–August 2014, Crowd-sourcing for data annotation

Nathaniel Lyons, June 2013–December 2013, metonym detection

Kevin Gilbert, summer 2013, toponym disambiguation

Gautam Ganesh, 2012–2013, toponym extraction and geo-merge, Anna University, Chennai

Hamsini Krishnakumar, 2012–2013, toponym extraction and geo-merge, Anna University, Chennai

Alison Kao, 2013, metonym detection

Wangzi He, 2012, large-scale testing on the supercomputer

Shilpa Balaji, 2011, geoparsing

Yichao Zhao, 2010, ontology integration

Matthew Goldfarb, 2009, ontology integration

Consulting [selected projects]

Artificial Intelligence/Data Mining
    Hack4 Defense: advising two separate graduate student research projects, 2017:
        Georgetown University; University of Pittsburgh
    Federal Bureau of Investigation (FBI), 2015

Website Design
    The Open Curriculum [www.opencurriculum.org], 2015
    Kaye Scholer, LLP, NY, 2005–2006

Information Systems
    Cosmopolitan Club, NY, 2007– 2008
    General Society of Mechanics and Tradesmen, NY, 2005–2006
    National Minority Supplier Development Council, Inc., NY, 2005
    New York Genealogical and Biographical Society, NY, 2004–2005
    New York Yacht Club, NY, 2004
    Polaris Arts, Ltd, NY, 2002–2004
    New Haven Day School, CT, 2001–2002

Conference proceedings and presentations

Gelernter, J. and Maheshwari, N. (2018). Visualization and communication tool for emergency response. *IEEE International Symposium on Technologies for Homeland Security HST '18,* October 23-24, Woburn, Mass, USA, pages 1-5.   doi: 10.1109/THS.2018.8574158

Maheshwari, N. and Gelernter, J. (2017). Situational awareness for Incident Response Management Software. Public Safety Communications Research Meeting, June 12-14, San Antonio, Texas.

Kotevska, O., Lbath, A., Gelernter, J. (2016). Event model to facilitate data sharing among services: Closing the gap between research and implementation. *IEEE World Forum on Internet of Things WF-IoT*, December 12-14, Reston Virginia.

Chen, X., Zhang, H. and Gelernter, J. (2015). Multi-lingual geoparsing based on machine translation. *International Conference on Identification, Information and Knowledge in the Internet of Things,* October, 2015, Beijing, China.

Nourjou, R. and Gelernter, J. (2015). Distributed Autonomous GIS for Automated Coalition Formation in Human Team in Urban Search and Rescue. *SIGSPATIAL MobiGIS,* November 3, 2013, Seattle, Washington, USA.

Gelernter, J. (2013). *Directed looking*. Invited presentation for Visual Search Workshop (Army Research Office), December 5-6, 2013, Washington, D.C.

Gelernter, J. and Zhang, W. (2013). Cross-lingual geo-parsing for non-structured data. *7th Workshop on Geographic Information Retrieval (GIR)* November 5, 2013, Orlando, Florida, U.S.A, 64-71.   doi:10.1145/2533888.2533943

Gelernter, J., Ganesh, G., Krishnakumar, H. and Zhang, W. (2013) Automatic gazetteer enrichment with user geo-coded data. *Second ACM SigSpatial International Workshop*

on Crowdsourced and Volunteered Geographic Information (GEOCROWD), November 5, 2013, Orlando, Florida*, U.S.A.*

Gelernter, J. (2013). Effective threat detection for surveillance, *13th Annual IEEE International Conference on Technologies for Homeland Security,* HST2013, November 12-14, 2013, Waltham, Massachusetts, 290-296.

Gelernter, J. and Han, S. (2012). *Geolocation and Dynamic Mapping of Social Media Messages.* Invitation to present poster at CyberGIS 2012, funded by NSF travel award.

Gelernter, J. and Wu, G. (2012). High performance mining of social media data. *Proceedings of the 1st Conference of the Extreme Science and Engineering Discovery Environment: Bridging from the eXtreme to the campus and beyond* XSEDE12, July 16-20, Chicago, IL [3p.].

Gelernter, J. (2011). NSF CyberGIS. Panel on VGI, Middleware and Collaborative GIS. Oak Ridge National Laboratory, Knoxville, TN, September 29, 2011. Panel discussant (no published proceedings).

Gelernter, J. (2010) Prototype of a data integration tool. *Society for Prevention Research, Denver, Colorado, June 1, 2010.* National Institutes of Health (NIH) Conference. Invited speaker.

Gelernter, J, Cao, D., Lu, R., Fink, E., Carbonell, J. (2009). Creating and visualizing fuzzy document classification. *IEEE Conference on Man, Systems and Cybernetics, October 11-14, San Antonio, Texas*, 672-679. Retrieved June 30, 2010 from http://www.cs.cmu.edu/~eugene/research/full/fuzzy-documents.pdf

Gelernter, J. (2009). Data mining of maps and their automatic region—time—theme classification. *The SIGSPATIAL, 1*(1) March 2009. Retrieved September 6, 2009 from http://www.sigspatial.org/sigspatial-special-issues/SIGSPATIALSpecialVol1Num1Mar09.pdf 39-44.

Gelernter, J. and Lesk. M. (2008). Traditional resources help interpret texts. *Proceedings of the 2008 ACM Workshop on research advances in large digital book repositories.* (pp. 17-20.) New York: ACM Press.

Gelernter, J. and Lesk. M. (2008). Is your map here? *The 17th International Research Symposium on Computer-based Cartography, September 8-11, 2008, Shepherdstown, West Virginia, USA.* [13 pp.]

Gelernter, J. (2007). A quantitative analysis of collaborative tags: Evaluation for information retrieval—a preliminary study. *The 3rd International Conference on Collaborative Computing: Networking, Applications and Work-sharing* Collaborate.Com. November 12-15, 2007, Crowne Plaza White Plains, New York, USA, 376-381.

Gelernter, J., and Old, C. (1995). The Metropolitan Museum of Art Performing Arts Index, In A. W. Smith (Ed.), *Dance and Technology III*, 9-16.

Gelernter, J. (1994). Mannerist aesthetics and the court dance of Fabritio Caroso *Proceedings of the Society of Dance History Scholars* 10-13, 129-139.

Articles and reports

Gelernter, J. (2020). For peaceful sleep, figure out each night what time to put baby to bed.

Tian, Y., Cheng, G., Gelernter, J., Yu, S. Song, C., Yang, B. (2019). Joint Temporal Context Exploitation and Active Learning for Video Segmentation. *Pattern Recognition*. DOI 10.1016/j.patcog.2019.107158

Gelernter, J., Maheshwari, N. (2019). Qualitative study of indoor map file incompatibility in software applications. *Open Geospatial Data, Software and Standards,* vol 5 no. 2.

Tian, Y., Wang, X., Gelernter, J., Li, J., Yu, J., Yu, Y. (2018). Traffic sign detection using a multi-scale recurrent attention network. *IEEE Transactions on Intelligent Transportation Systems,* pages 1-10. Digital Object Identifier: 10.1109/TITS.2018.2886283

Tian, Y., Gelernter, J., Wang, X. (2018). Lane marking detection via fast end-to-end deep convolutional neural network: our Patch Proposal Network (PPN). *Neurocomputing*, vol 280.

Gelernter, J. (2017). Techniques that hold the attention of an audience during your research presentation. *Educational Research Applications* ERCA-109

Gelernter, J and Jha, J. (2016). Challenges in Ontology Evaluation *Journal of Data and Information Quality* (JDIQ) vol 7 no. 3.

Nourjou, R. and Gelernter, J. (2015). Distributed Autonomous GIS for Automated Coalition Formation in Human Team in Urban Search and Rescue. *ACM SIGSPATIAL MobiGIS 2015, November 3, 2015, Seattle, Washington, USA*.

Chen, X., Zhang, H. and Gelernter, J. (2015). Multi-lingual geoparsing based on machine translation. *arXiv:1511.01974*

Zhang, W., Yu, Y., Gupta, O. and Gelernter, J. (2015). Recognizing Extended Spatiotemporal Expressions by Actively Trained Average Perceptron Ensembles. *arXiv:1508.04525*

Zhang, W. and Gelernter, J. (2015). Exploring Metaphorical Senses and Word Representations for Identifying Metonyms. *arXiv:1508.04515*

Gelernter, J. and Carley, K. M. (2015). Spatiotemporal network analysis and visualization. *International Journal of Applied Geospatial Research, 6*(2) 78-98*, April – June 2015.

Zhang, W. and Gelernter, J. (2014). Geocoding Location Expressions in Twitter Messages: A preference learning method *Journal of Spatial Information Science 9*, 37-70

Gelernter, J. and Balaji, S. (2013). An algorithm for local geoparsing of microtext. *Geoinformatica,*17(4), 635-667.

Gelernter, J. and Mushegian, N. (2011). Geo-parsing messages from microtext. *Transactions in GIS 15*(6), 753-773.

Lesk, M. and Gelernter, J. (2011). Use of ontologies for data integration and curation. *International Journal of Digital Curation 6* (1) Retrieved March 11, 2011 from http://www.ijdc.net/index.php/ijdc/issue/view/12

Cao, D., Qiao, X.Q., Gelernter, J., Li, X.F., Meng, L.M. (2011). Mining data correlation from multi-faceted sensor data in the internet of things. *China Communications 8*(1): 132-139.

Gelernter, J., Cao, D. and Carbonell, J. (2010). Studies on relevance, ranking and results display. *Journal of Computing 2*(6), 7-20. https://sites.google.com/site/journalofcomputing/volume-2-issue-6-june-2010

Gelernter, J. (2009). Image indexing in article component databases. *Journal of the American Society for Information Science and Technology*, *60*(8), 1-12.

Books and chapters

Gelernter, J. (2015). Computer systems and protocols to heighten effectiveness of real-time surveillance. *New Developments in Surveillance Systems and National Security.* Nova Publishers. By editor invitation.

Gelernter, J., Cao, D., Carley, K. (2011). Extraction of Spatio-Temporal Data for Social Networks, Chapter 15 in T. Özyer, J. Rokne, G. Wagner, A.H.P. Reuser, *The Influence of Technology on Social Network Analysis and Mining*. Lecture Notes in Social Networks, vol. 6, (pp. 351-372) Springer, Vienna. [ISBN: 978-3-7091-1346-2] DOI 10.1007/978-3-7091-1346-2_15.

Gelernter, J. (2010). Mining journal article components: the case of map graphics Ed. N. Tang *Information Extraction from the Internet*. (pp. 57-72). IConcept Press. [ISBN: 978-14563570-0-9]

Gelernter, J. (2009). *Intelligent Information Retrieval for Maps.* Saarbrüken, Germany: VDM. [ISBN: 978-3-639-14359-1]

Gelernter, J. (2009). Neogeography. Chapter 39 in *Handbook of Research on Social Interaction Technologies and Collaboration Software,* Eds. T. Dumova and R. Fiordo, 439-450. [ISBN: 978-1-60566-368-5]. DOI 10.4018/978-1-60566-368-5.ch039

Gelernter, J. and Rader, P. (2001). Dance notation. In M. Edsall (Ed.), *A Core Collection in Dance*, American Library Association. By editor invitation.

Gelernter, J. (1998). The shakers by Doris Humphrey. and White Oak Dance Project. In T Benbow-Pfalzgraf (Ed.), *International Dictionary of Modern Dance* (pp. 709-710; 819-821). St. James Press.

Service

Technical communication

Lecture "Create a compelling research poster," NIST, July 18, 2016

Guide "How to Give a Successful Slide Presentation," NIST Presentation Practice Room

Technical grant reviewer

Public Safety (PSIAP): Location-based services domain, March-April 2017

Bi-national Research and Development (BIRD): High tech domain, December 2016

NIST grants: Cybersecurity domain, February 2016

Washington Editorial Review Board Reader

> Reviewed papers on topics including:
>> Cyber-physical systems
>> Electronic Health Records
>> Usability
>> Geoinformatics

NIST Research Library Committee

> Represented the Information Technology Laboratory, autumn 2015-spring 2017

Program Committee Member and Reviewer

> NIST Engineering Lab, March 2020, planning comments on Smart Systems Research with Engineering Lab Senior Researcher Al Jones

> ACM SigSpatial Program Committee, November 7-10th, 2017 – reviews due summertime

> International Conference on Knowledge Discovery and Information Retrieval (KDIR), Portugal, 9-11 November 2016 – reviews due summer 2016.

> International Conference on Information and Knowledge Management (CIKM), Melbourne, Australia, October 19-23 2015 – reviews due spring 2015

> National Science Foundation (NSF). Information and Intelligent Systems Division, 2015

Judge and Organizer

> Chair, Ontology Symposium, Washington DC, May 9-10, 2016
>> Created a practical workshop in which participants worked together on actual ontology integration and use problems. Several participants mentioned afterwards that the workshop was a valuable addition.

> Language Technologies Institute Student Research Symposium, 2014
>> Invited to review papers and help judge presentations at the annual symposium for graduate students

Technical Reviewer

> *Advanced Social Networking Analysis and Mining,* Springer
> *Computational and Mathematical Organization Theory*
> *IEEE Computer*
> *Earth Science Informatics*
> *International Journal of Digital Curation*
> *International Journal of Geographical Information Science*
> *International Journal on Semantic Web and Information Systems (1)*
> *Journal of Spatial Information Science (JoSIS)*
> *Journal of the American Society for Information Science and Technology*
> *PLoS One*
> *Transactions in GIS*