

Katherine Grace Herbert-Berger
Associate Professor of Computer Science
Montclair State University
herbertk@montclair.edu

EDUCATION

Ph.D.	2004	Computer Science	New Jersey Institute of Technology, Newark, New Jersey
M.S.	2001	Computer Science	New Jersey Institute of Technology, Newark, New Jersey
B.S.	1999	Computer Science & Mathematics	Saint Peter's College, Jersey City, New Jersey

PROFESSIONAL EXPERIENCE

Montclair State University

Associate Professor, Department of Computer Science	Fall 2011 – Present
Information Technology Solutions Coordination, NJ ACE-CC	November 2015 – June 2018
Graduate Program Coordinator, Information Technology	March 2017 – May 2018
Graduate Program Coordinator, Computer Science	May 2012 – June 2014
Assistant Professor, Department of Computer Science	Fall 2004 – Summer 2011
Bioinformatics Lab	Fall 2004 – Present

New Jersey Institute of Technology

Research Associate, DKE Lab, Department of Computer Science, Summer 2004 - Present
Graduate Student Research Associate, DKE Lab, Department of Computer Science, Spring 2000 – May 2004
Teaching Assistantship, Department of Computer Science, Fall 1999 – Spring 2004

AT&T, Florham Park, New Jersey

Research Intern - AT&T Labs Undergraduate Research Program, Summer 1997,1998
• 1998 - Researched database warehousing techniques
• 1997 - Researched feature interaction problems in telephony

HONORS AND AWARDS

GRANTS

- PI, National Science Foundation, “Collaborative Research: RET Site: Data Sciences and Data Fluency in Scientific Data Sets (DATA3)”, Collaborative NSF Research Experience for Teachers Program with NJIT, \$560,110.00, June 1, 2022-May 31, 2024.
- PI, National Science Foundation, “Collaborative Research: ANSWERS: Prediction of Geoeffective Solar Eruptions, Geomagnetic Indices, and Thermospheric Density Using Machine Learning Methods”, Collaborative NSF ANSWERS Program with NJIT, Rutgers and University of West Virginia, May 1, 2022 – April 30, 2025, \$44,947.
- PI, New Jersey Department of Education, “Montclair State University Computer Science Education Hub”, \$333,335. June 15, 2022 – March 31, 2023.
- Co-PI, New Jersey Department of Education, “Montclair State University Computer Science for Everyone Everywhere”, \$333,333, June 15, 2022 – March 31, 2023
- PI, National Science Foundation, “The NECST Program: Networking and Engaging in Computer Science and Information Technology Program”, NSF S-STEM Program, June 1, 2013-May 31, 2018, \$619,575.
- Co-PI, National Science Foundation, “Opening Pathways, Engaging, and Networking in Chemistry in Northern New Jersey [OPEN-NJ]”, NSF S-STEM Program, July 1, 2016 – June 30, 2020, \$603,999.
- Senior Personnel, National Science Foundation, “STEM Pioneers: A 3-year pilot study to increase science literacy and STEM enrollment among first-year first-generation students”, October 1, 2016 – September 30th, 2019, June 15, 2016 – June 30th, 2018, \$300,000.
- Senior Personnel, New Jersey Department of Health, “NJ Governor’s Council for Medical Research & Treatment of Autism”, \$3,304,000, November 2015-June 2018.
- PI, Montclair State University, “Developing Mobile Data Analysis Systems for Sustainability Sciences”, Grant Proposal Development Grant, \$6,000

- Co-PI, PSE&G Institute for Sustainability Studies, “Towards a Mobile Exploratory Research and Data Analytics Platform for Environmental & Ecological Sustainability”, with Dr. Emily Hill and Dr. Jennifer Bragger, December 2012-December 2013, \$30,000.
- Co-Principal PI, Margaret and Herman Sokol Institute for Pharmaceutical Life Sciences Faculty Fellow. Project: Predicting drug-target relationships for dihydrofolate reductase homologs through phylogenetic analysis”, with Dr. Nina Goodey, Summer 2008 – Summer 2010, \$50,000 (\$25,000 per PI).
- PI, Sokol Faculty-Student Research Award, Prediction of Modulators of Pyruvate Kinase in SMILES Text Using A Priori Methods”, Fall 2006, \$2000.
- PI, Sokol Faculty-Student Research Award, ““A Study of Phylogenetic Tools for Genomic Nomenclature Data Cleaning”, Summer 2006, \$2000.
- PI, University Faculty-Student Research Award, “Automated Gene Processing and Exon Sequence Retrieval”, Summer 2005, \$2000.

AWARDS

- Montclair State University College of Science and Mathematics Service Award, April 2018
- Faculty Mentor of Best Student Paper Award, ACM SIGCSE’s 11th Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE)
- Teaching Assistantship and Full Tuition award for PhD studies at New Jersey Institute of Technology (1999 – 2004)
- Summer 2003: Summer Research Assistantship Award from New Jersey Institute of Technology
- Summer 2003: Summer Research Assistantship Award from NSF Grant IIS-9988636
- Summer 2002: Summer Research Assistantship Award from NSF Grant IIS-9988636
- Summer 2001: Summer Research Assistantship Award from NSF Grant IIS-9988636
- Summer 2001: Summer Research Award: New Jersey I-TOWER Project
- May 1999: The Computer Science Award, Saint Peter’s College, Jersey City, New Jersey

MEDIA FEATURES

- Featured in the Scientists/ Faculty of 1000’s article about DrugTree research, <http://blog.f1000.com/2011/04/18/climbing-the-drugtree/>, Spring 2011.
- Feature Article about my work at Montclair State University: Article: Alex, Patricia, “Women need to show more computer drive”, The Record, Sunday, November 25, 2007, pp L2. Story provided upon request.
- Television: NJN News feature about my interdisciplinary, undergraduate research work: Segment: Reagan, Patrick “Computer Science Tools” New Jersey Network News, Television Airing Date: Friday, December 14, 2007. Story at approximately 16 minutes and 30 seconds into the episode. DVD provided upon request.

PUBLICATIONS

BOOKS

1. K.G. Herbert-Berger, T.J. Marlowe, Introduction to Data Science: An Integrated and Interdisciplinary View. Taylor Francis, in preparation, 2023.
2. T.J. Marlowe, K.G. Herbert-Berger, Transitioning into STEM: A Guide for Graduate Education and Career Development. Taylor Francis, in preparation, 2023.
3. Kevin Byron, Katherine G. Herbert. Jason T.L. Wang, **Bioinformatics Database Systems**. CRC Press. December 2016.

PEER REVIEWED CHAPTERS PUBLISHED

1. Katherine G. Herbert and James H. Dyer. Integrating interdisciplinary science into high school science modules through a preproinsulin example, **Biomath in Schools**, pp. 119-146, American Mathematical Society, March 30, 2011.

2. Katherine G. Herbert, Junilda Spirollari, Jason T.L. Wang, William H. Piel, John Westbrook, Winona Barker, Zhang-Zhi Hu, Cathy H. Wu. Biological Databases, pp 307-317, **The Encyclopedia of Computer Science and Engineering**, Wiley & Sons, electronic publication, June 12, 2008, hardbound publication, January 2009.
3. Katherine G. Herbert, Jason T.L. Wang, Jianghui Lui. Information Retrieval and Data Mining, **The Computer Science and Engineering Handbook**, pp. 75-1 to 75-16, Second Edition (ed. A. Tucker), CRC Press, June 2004.
4. Jason T. L. Wang, Qicheng Ma, Katherine G. Herbert, Software Engineering and Knowledge Engineering Issues in Bioinformatics. in **Handbook of Software Engineering and Knowledge Engineering, Vol. 1, Fundamentals**, (ed. S. K. Chang), Chapter 30, pp. 719-732, World Scientific Publishing Company, 2001.

PEER REVIEWED JOURNAL ARTICLES

1. Thomas J. Marlowe, Katherine G. Herbert, An Interdisciplinary View of Education in the Formal and Natural Sciences – From STEM to STREAM to ..., *Journal of Systemics, Cybernetics, and Informatics*, 17 (5), 75-87, December 2019.
2. Katherine G. Herbert, Thomas J. Marlowe, An Interdisciplinary Graduate Certificate in the Formal and Natural Sciences – A Proposal, *Journal of Systemics, Cybernetics, and Informatics*, 17 (5), 88-92, December 2019.
3. Nina M. Goodey, Katherine G Herbert, Sarah M. Hall Bagley, C. K. 2011. “Prediction of residues involved in inhibitor specificity in the dihydrofolate reductase family.” *Biochimica et Biophysica Acta (BBA) - Proteins and Proteomics*, Vol. 1814, Issue 12, pp. 1870-1879, December 2011.
4. Katherine G. Herbert, Jason T.L. Wang. “Biological data cleaning: a case study”, the *International Journal of Information Quality*, Vol 1, Issue 1, pp. 60-82, June 2007.
5. Katherine G. Herbert, Dorothy Deremer. “Biological research through science informatics,” pp. 177-181, *CUR Quarterly*, June 2006.
6. Katherine G. Herbert, Narain H. Gehani, William H. Piel, Jason T.L. Wang, Cathy H. Wu. “BIO-AJAX: An Extensible Framework for Biological Data Cleaning”. *ACM SIGMOD Record, Special Issue on Data Engineering for the Life Sciences*, pp. 51-57, June 2004.
7. Sen Zhang, Jason T.L. Wang, Katherine G. Herbert. “XML Query by Example,” in *the International Journal of Computational Intelligence and Applications Special Issue on Internet Intelligence Systems*. World Scientific Publishing, Vol 2, No. 3, pp. 329-338, September 2002.

PEER REVIEWED PROCEEDINGS ARTICLES

1. Katherine G. Herbert, Thomas J Marlowe, *et. al.*. “Graduate Transitions: Lessons Learned from the S-STEM NECST Program”, American Society for Engineering Education Annual Meeting (ASEE) June 16-19, 2019, Tampa, Florida, accepted.
2. Nina Goodey, Katherine G. Herbert, *et. al.* “OPEN-NJ: Opening and Expanding Pathways to Graduate Study in Chemistry in Northern New Jersey”, American Society for Engineering Education Annual Meeting (ASEE) June 16-19, 2019, Tampa, Florida, accepted.
3. Katherine G. Herbert, Thomas J Marlowe, *et. al.* “Engaging in Computer Science and Information Technology Program”, American Society for Engineering Education Annual Meeting (ASEE) June 25-28, 2017, Columbus, Ohio.
4. Nikita S. Panchariya, Andrew DeStefano, Varsha Nimbagal, Revathi Ragupathy, Serkan Yavuz, Katherine G. Herbert, Emily Hill, Jerry Alan Fails. “Current Developments in Big Data and Sustainability Sciences in Mobile Citizen Science Applications,” *BigDataService 2015*, pp. 202-212, San Francisco, California.

5. Katherine G. Herbert, Emily Hill, Jerry Alan Fails, Joseph O. Ajala, Richard T. Boniface, Paul W. Cushman. "Scientific Data Infrastructure for Sustainability Science Mobile Applications," *IEEE 3rd International Congress on Big Data*, June 27-July 2, 2014, Anchorage, Alaska, USA.
6. Jerry A. Fails, Katherine G. Herbert, Emily Hill, Chris Loeschorn, Spencer Kordecki, David Dymko, Andrew DeStefano, Zill Christian, "GeoTagger: A Collaborative and Participatory Environmental Inquiry System," *17th ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW 2014)*, February 15-19, 2013, Baltimore, Maryland, USA.
7. Marvin Lapeine, Katherine G. Herbert, Emily Hill, Nina M. Goodey. "Mobile interaction and query optimization in a protein-ligand data," in *Proceedings of the 2013 ACM SIGMOD International Conference on Management of Data*, pp. 1291-1292, June 2013 New York, New York, USA.
8. Robert M. Siegfried, David M. Chays, Katherine G. Herbert. "Will There Ever Be Consensus on CS1?," in *Proceedings of the 2008 International Conference on Frontiers in Education: Computer Science and Computer Engineering*, pp. 529-535, July 2008, Las Vegas, Nevada.
9. Jason T.L. Wang, Dongrong Wen, Bruce Shapiro, Katherine G. Herbert, Jing Li, Kaushik Gosh. "Toward an Integrated RNA Motif Database", in *Proceedings of the 4th International Workshop of Data Integration in the Life Science Workshop, Lecture Notes in Computer Science: SL 8 Bioinformatics*, pp. 27-36, June 2007, Philadelphia, Pennsylvania.
10. Xiaoming Wu, Katherine G. Herbert, Jason T. L. Wang. "A New Kernel Method for RNA Classification," in *Proceedings of the IEEE 6th Symposium on Bioinformatics and Bioengineering*, pp. 201-208, October 2006, Arlington, Virginia.
11. Sen Zhang, Katherine G. Herbert, Jason T.L. Wang, William H. Piel and David R.B. Stockwell. "PhyloMiner: a tool for evolutionary data analysis," in *Proceedings of 18th International Conference on Scientific and Statistical Database Management*, pp. 127-132, July 2006, Vienna, Austria.
12. Dorothy Deremer and Katherine G. Herbert. "An Interdisciplinary Undergraduate Science Informatics Degree in a Liberal Arts Context," in *Proceedings of the 37th Technical Symposium on Computer Science Education*, Houston, Texas, March 2006.
13. Katherine G. Herbert and Jason T.L. Wang. "Phylogenetic Information Integration: Research Issues and Techniques," in *Proceedings of the Joint Conference on Information Sciences 6th International Symposium on Computational Biology and Genome Information Systems & Technology*, Salt Lake City, Utah, July 2005, electronically published.
14. Katherine G. Herbert, Shashikanth Pusapati, Jason T. L. Wang, and William H. Piel. "Lineage Path Integration for Phylogenetic Resources," in *Proceedings of 17th International Conference on Scientific and Statistical Database Management*, pp. 117-120, June 2005, Santa Barbara, California.
15. Jianghui Liu, Jason T.L. Wang, Wynne Hsu, and Katherine G. Herbert. "XML Clustering by Principle Component Analysis," in *Proceedings of the 16th IEEE International Conference on Tools with Artificial Intelligence*, pp. 658-662, November 2004, Boca Raton, Florida.
16. Katherine G. Herbert, John Westbrook and Jason T.L. Wang. "Data Integration in Biological Databases," in *Proceedings of the Joint Conference on Information Sciences 4th International Symposium on Computational Biology and Genome Information Systems & Technology*, pp. 895-898, Durham, North Carolina, September 2003.
17. Huiyuan Shan, Katherine G. Herbert, William Piel, Dennis Shasha, Jason T.L. Wang. "A Structure-Based Search Engine for Phylogenetic Databases," in *Proceedings of 14th International Conference on Scientific and Statistical Database Management*, pp. 7-10, July, 2002, Edinburgh, Scotland.

18. Katherine G. Herbert, Huiyuan Shan and Jason T.L. Wang. "Approximate Searching in Phylogenetic Databases," in *Proceedings of the Atlantic Symposium on Computational Biology and Genome Information Systems & Technology*, pp. 140-143, Durham, North Carolina, March 2001.

SOFTWARE AUTHORED

1. New Jersey Autism Center of Excellence – Coordinating Center Website and Information Platform. 2016-present.
2. Geotagger and Mobile Sustainability Toolkit, with Emily Hill, Jerry Fails, and Jennifer Bragger. 2012-present.
3. "DrugTree", created with students D. Jason Seraydarian, Maryam Aziz, Roberto Suarez and Shreya Achar, December 2010. Significant modification, May 2013. [http:// dragon.cs.montclair.edu/ drugtree/index.php](http://dragon.cs.montclair.edu/drugtree/index.php)
4. "Automated Gene Sequence Retrieval System", advised students Tazeen Fatima, Jonathan Marra, Ronald Realubit and Georgiy N. Shchegolev, Fall 2005 – Summer 2006.
5. "BIO-AJAX for Lineage Paths", Dissertation research. Authored by Katherine G. Herbert, May 2004, significantly revised, January 2005.
6. "BIO-AJAX for TreeBASE", Dissertation research. Authored by Katherine G. Herbert, November 2003.
7. "An automated annotation tool for courseware development", Courseware on Demand Project. Authored by Vincent Oria, Katherine Herbert and Viswanath Neelavalli, for NJ-ITOWER project, December 2001.

POSTERS WITH PEER REVIEWED PUBLISHED ABSTRACTS

1. Robert M. Siegfried, Katherine G. Herbert, Jason Siegfried. "CS2 and the Impact of Programming Language Choice" SIGCSE '20: Proceedings of the 51th ACM Technical Symposium on Computer Science Education, Portland, Oregon, March 2020.
2. Katherine G Herbert-Berger, Nina M Goodey, Stephen Ruczzyk, Scott Kight, and Thomas J. Marlowe. "Infusing CS Graduate Transition Curriculum with Professional, Technical and Data Science Competencies" SIGCSE '19: Proceedings of the 50th ACM Technical Symposium on Computer Science Education, Minneapolis, Minnesota, February 2019.
3. Robert M. Siegfried, Diane Liporace and Katherine G. Herbert, "What Can the Reid List of First Programming Languages Teach Us About Teaching CS1?", SIGCSE '19: Proceedings of the 50th ACM Technical Symposium on Computer Science Education, Minneapolis, Minnesota, February 2019.
4. Virginia L. Iuorno, Katherine G. Herbert, Jeffrey H. Toney, "A Support Vector Machine Method to Classify Enzyme Modulators", poster, Proceedings of the ISCB 5th Annual Rocky Mountain Bioinformatics Conference", Snowmass, Colorado, December 1-3, 2007 (faculty mentor).
5. Jason Caronna, Rojita Sharma, Jonathan Marra, Virginia L. Iuorno, Katherine G. Herbert and Jeffrey H. Toney, "Prediction of Modulators of Pyruvate Kinase in SMILES Text Using Aprori Methods", Proceedings of the 12th Annual ACM SIGCSE International Conference on Innovation and Technology in Computer Science Education, Dundee, Scotland, June 2007, pp 348 (faculty mentor for student poster)
6. Jonathan D. Marra, Katherine G. Herbert and Jason T.L. Wang. "A Study of Phylogenetic Tools for Genomic Nomenclature Data Cleaning", Proceedings of the 12th Annual ACM SIGCSE International Conference on Innovation and Technology in Computer Science Education, Dundee, Scotland, June 2007, pp 347 (faculty mentor for student poster)
7. Tazeen Fatima, Jonathan Marra*, Ronald Realubit, Georgiy Shchegolev and Katherine G. Herbert (faculty mentor). "Automated Gene Processing and Exon Sequence Retrieval", in the Proceedings of the 11th Annual

ACM SIGCSE International Conference on Innovation and Technology in Computer Science Education, Bologna, Italy, June 2006, pp 366. Paper was a winner of a best student paper award at the conference.

WHITE PAPERS

1. “*Machine Learning in Heliophysics and Space Weather Forecasting: A White Paper of Findings and Recommendations*”, Gelu Nita, Manolis Georgoulis, Irina Kitiashvili, Viacheslav Sadykov, Enrico Camporeale, Alexander Kosovichev, Haimin Wang, Vincent Oria, Jason Wang, Rafal Angryk, Berkay Aydin, Azim Ahmadzadeh, Xiaoli Bai, Timothy Bastian, Soukaina Filali Boubrahimi, Bin Chen, Alisdair Davey, Sheldon Ferreira, Gregory Fleishman, Dale Gary, Andrew Gerrard, Gregory Hellbourg, Katherine Herbert, Jack Ireland, Egor Illarionov, Natsuha Kuroda, Qin Li, Chang Liu, Yuexin Liu, Hyomin Kim, Dustin Kempton, Ruizhe Ma, Petrus Martens, Ryan McGranaghan, Edward Semones, John Stefan, Andrey Stejko, Yaireska Collado-Vega, Meiqi Wang, Yan Xu, Sijie Yu, Cornell University, June 22, 2020, <https://arxiv.org/abs/2006.12224>.

TECHNICAL REPORTS AND POSTERS

1. Marvin Lapeine, Katherine G. Herbert, Emily Hill, Nina M. Goodey. “Mobile interaction and query optimization in a protein-ligand data “, poster, 2013 ACM SIGMOD International Conference on Management of Data, New York, New York, June 22-27, 2013.
2. Sarah Morgan Hall, Nina Goodey, Katherine G. Herbert, Heba Obeidallah, “Identification of residues involved in ligand binding specificity in the dihydrofolate reductase family”, poster, *15th Annual Meeting of American Association of Biochemistry and Molecular Biologist*, Undergraduate Competition, Washington, D.C., April 9-13, 2011.
3. Katherine G. Herbert, Nina M. Goodey, D. Jason Seraydarian, Roberto Suarez, Shreya Achar, “DrugTree: A phylogenetic platform to study protein-ligand binding relationships in the drug discovery process”, poster, *The International Society of Computational Biologist’s Conference on Semantics in Healthcare and Life Sciences*, Boston, MA., February 23-25, 2011
4. Jason T.L. Wang, William H. Piel and Katherine G. Herbert. “What are the major informatics research challenges in biomedicine today?”, Request for Information Report to the National Library of Medicine, February 2006.
5. Katherine G. Herbert and James H. Dyer, “Science Informatics at Montclair State University”, poster, *DIMACS Conference on Linking Mathematics and Biology in the High Schools*, Rutgers University, New Brunswick, New Jersey, April 29, 2005.
6. Katherine G. Herbert, “Biological Data Quality Research in the Department of Computer Science”, College of Science and Mathematics Newsletter, Montclair State University, Spring 2005.
7. Vincent Oria, Katherine G. Herbert, Viswanath Neelavalli, "An Automated Tool for Metadata Generation for Courseware-on-Demand", Technical Report submitted to NJ-ITOWER, December 2001.

PROFESSIONAL PRESENTATIONS/ABSTRACTS

1. Nina Goodey, Josh Galster, Julie Dalley, Dirk Vanderklein, Katherine G. Herbert, *et. al.* STEM Pioneers A program for first-year first-generation students”, Montclair University Teaching and Learning Conference, May 2018.
2. Katherine G. Herbert, Thomas J Marlowe, et.al., “Engaging in Computer Science and Information Technology Program”, *American Society for Engineering Education Annual Meeting*, June 25-28, 2017, Columbus, Ohio.
3. Nikita S. Panchariya, Andrew DeStefano, Varsha Nimbagal, Revathi Ragupathy, Serkan Yavuz, Katherine G. Herbert, Emily Hill, Jerry Alan Fails, “Current Developments in Big Data and Sustainability Sciences in Mobile Citizen Science Applications”. Presentation and published abstract, *BigDataService 2015*: 202-212, San Francisco, California.

4. "Scientific Data Infrastructure for Sustainability Science Mobile Applications", *IEEE 3rd International Congress on Big Data*, June 27 - July 2, 2014, Anchorage, Alaska, USA.
5. "DrugTree: A phylogenetic platform to study protein-ligand binding relationships in the drug discovery process", *The International Society of Computational Biologists' Conference on Semantics in Healthcare and Life Sciences*, Boston, MA., February 23-25, 2011
6. "Algorithms and Software for Calculating and Visualizing the Cardinality of the Grand Bounding Ball", *WorldComp 2008, 4th International Conference on Data Mining*, Las Vegas, Nevada, July 15, 2008.
7. "Automated Taxonomy Generation for Summarizing Multi-type Relational Datasets", presented on behalf of Tao Li and Sarabjot S. Anand at the 4th International Conference on Data Mining. Las Vegas, Nevada, July 15, 2008.
8. "Integrating Interdisciplinary Science into High School Science", with James H. Dyer. Two-hour workshop, 33rd Annual Trenton Computer Festival, Trenton, New Jersey, April 26, 2008.
9. "A Support Vector Machine Method to Classify Enzyme Modulators", *ISCB 5th Annual Rocky Mountain Bioinformatics Conference*, Snowmass, Colorado, December 1, 2007.
10. "Toward an Integrated RNA Motif Database", 4th International Workshop of Data Integration in the Life Science Workshop, Lecture Notes in Computer June 27, 2007, Philadelphia, Pennsylvania.
11. "A New Kernel Method for RNA Classification", *IEEE 6th Symposium on Bioinformatics and Bioengineering*, October 14, 2006, Arlington, Virginia.
12. "PhyloMiner: a tool for evolutionary data analysis", *18th International Conference on Scientific and Statistical Database Management*, July 3, 2006, Vienna, Austria.
13. "What is Science Informatics?" with Dorothy Deremer, Charles Du, James H. Dyer and Aihua Li, 2005 New Jersey Science Convention, Garden State Exhibition Center, Somerset, NJ, October 5, 2005.
14. "Developing a New Jersey Science Informatics Curriculum at Montclair State University" with Dorothy Deremer, Charles Du, James H. Dyer and Aihua Li, 2005 New Jersey Science Convention, Garden State Exhibition Center, Somerset, NJ, October 5, 2005.
15. "Phylogenetic Information Integration: Research Issues and Techniques", Presentation and published abstract, *Proceedings of the Joint Conference on Information Sciences 6th International Symposium on Computational Biology and Genome Information Systems & Technology*, Salt Lake City, Utah, July 25, 2005
16. "Science Informatics at Montclair State University" with James H. Dyer, *DIMACS Conference on Linking Mathematics and Biology in the High Schools*, Rutgers University, New Brunswick, New Jersey, April 29, 2005.
17. "XML Clustering by Principal Component Analysis", *IEEE 16th International Conference on Tools in Artificial Intelligence*, Boca Raton, Florida, USA, November 17, 2004.
18. "Data Cleansing and Knowledge Bases", *4th Emerging Information Technologies Conference*, Princeton, New Jersey, USA, October 30, 2004.
19. "Data Integration in Biological Databases", *3rd Atlantic Symposium on Computational Biology and Genome Information Systems and Technology*, 7th Joint Conference on Information Sciences, Raleigh, North Carolina, USA, September 26, 2003.
20. "TreeRank: A Similarity Measure for Nearest Neighbor Searching in Phylogenetic Databases", *IEEE 15th International Conference on Scientific and Statistical Database Management*, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA, July 10, 2003.

21. "A Structure-Based Search Engine for Phylogenetic Databases", *IEEE 14th International Conference on Scientific and Statistical Database Management*, July 24, 2002, University of Edinburgh, Edinburgh, Scotland.
22. "ATreeGrep: Approximate Searching in Unordered Trees", *IEEE 14th International Conference on Scientific and Statistical Database Management*, July 24, 2002, University of Edinburgh, Edinburgh, Scotland.
23. "Approximate Searching in Phylogenetic Databases", Atlantic Symposium on Computational Biology and Genome Information Systems & Technology, Durham, North Carolina, March 16, 2001.

COLLOQUIA, SEMINARS, AND CAMPUS PRESENTATIONS

1. "GeoTagger and DrugTree: An overview of two science applications of data science," colloquium presentation, Department of Mathematics and Computer Science, Seton Hall University, March 2014.
2. "Insights into Computer Science Graduate Studies", Workshop for Montclair State University NSF iImagine REU Students, July 1, 2008.
3. "Insights into Computer Science Graduate Studies", Workshop for Montclair State University NSF iImagine REU students, July 11, 2007.
4. "Bioinformatics Activities in Computer Science", Outreach Workshop for High School students participating in an admission day at Montclair State University, December 8, 2006.
5. "Evolutionary Data Analysis and Data Management Issues", invited presentation, *Saint Peter's College Pi Mu Epsilon* annual meeting, Jersey City, New Jersey, April 25, 2005.
6. Multiple departmental and interdisciplinary seminars and presentations, Montclair State University Department of Computer Science, and College of Science and Medicine.

STUDENT RESEARCH MENTORING

1. Diane Liporace, "Object Oriented Programming- A Survey of Experiences with Language Choice", Master's Project, November 2018.
2. Maxim Antov "Drone Connectivity to Geotagger App", Undergraduate Student Project, April 2017 and December 2018.
3. Jessica Miller, "Cybersecurity Threats in Higher Education", Master's Literature Survey, May 2018.
4. Kevin Phelan, "A Web Application for Municipal Arborists", Undergraduate Student Project, August 2018.
5. Ryan Nicolosi, "MATCH: A mobile application for mainstream society interested in helping autistic individuals", Undergraduate Student Project, April 2018 (Finalist in Casabona Future Scientist Award).
6. Daniel Ramalhosa, "DrugTree Systems Migration", Master's Project, February 2018.
7. James Liporace, "Mathematical Modeling in AI Algorithms", Graduate Student Research, December 2017.
8. Elizabeth Rogacki, "CS High School Education Across the United States", Master's Literature Survey, May 2017.
9. Riad Jeredoh, "Data Modeling in the GeoTagger environment", Master's Project, December 2016.
10. Nikita Panchariya, "Sentiments in Sustainability Data Collection: Understanding User Sentiment in Collaborative, Social Tagging Environmental Sciences Platforms", Master's Thesis, Successfully Defended April 1, 2016.
11. Andrew DeStefano, "GeoTagger API for Public Release", Graduate Project, May 2016.
12. Alcina Memar, "A Web Portal for User Data Design for a Mobile Sustainability Toolkit", Graduate Project, May 2016.
13. Colin Scheriff, "Usability Modifications in DrugTree", Master's Project, Fall 2015.
14. Aliet Cruz-Abreu, "A Web Portal for Synchronizing Data from a Mobile Sustainability Toolkit", Master's Project, Fall 2014.
15. Joseph Ajala, "Design and Implementation of Scientific Data", Graduate Project, Spring 2013.
16. Richard Boniface, "A Data Interface for the Sustainability Studies Mobile Toolkit", Graduate Project, Spring 2013.

17. Zareta Gochiyaeva, "Drug Tree: A Phylogenetic Platform to Study Protein-Ligand Relationships in the Drug Discovery Process", Graduate Project, Spring 2013.
18. Paul Singleton, "Development of a User Interface and Toolkit to Compare Enzymes and Their Corresponding Ligands and Inhibitors", Graduate Project, Spring 2013.
19. Marvin Lapeine, "Mobile interaction and query optimization in a protein-ligand data analysis system", Montclair HIP Student, March 2011 – June 2013 (Undergraduate Project, Graduated as SHIP Scholar).
20. Donald Jason Seraydarian, employed research student in Herbert Lab for work on data visualization on the DrugTree Project . May 2009-2012, continued as Graduate Research, 2012-2017.
21. Maryam Aziz, "Developing an interactive interface for a pharmacophylogenetic tool", Undergraduate Project, Fall 2009-Spring 2010.
22. Shreya Achar, "Integrating genetic databases and aid in designing the data integration facilities", Graduate Project, completed May 2010.
23. Omer Metin Opaydin. "Applying Exploratory Data Mining Techniques on RNA Data", Graduate Project, completed February 2009.
24. Shekerah Primus and Frantz Flls-Aime, "Creating a database to assist in the statistical analyses of biological research data", Undergraduate Project, completed May 2008
25. Brian Dugdale, "Biological Data Warehousing", Graduate Project, completed May 2008.
26. Jonathan Marra, "Sensitivity of Phylogenetic Tools for Gene Nomenclature Research", Undergraduate Project, completed Summer 2007.
27. Virginia L. Iourno, "Biomolecular Data Mining and Knowledge Discovery Applied to Enzyme Modulation", Graduate Project, completed Spring 2007.
28. Jonathan Marra, "Automated Gene Sequence Retrieval System", Undergraduate Research Project, completed Summer 2006.
29. Tazeen Fatima, Jonathan Marra, Ronald Realubit and Georgiy N. Shchegolev, "Automated Gene Sequence Retrieval System", Science Informatics Undergraduate Research Experience, Fall 2005 – Spring 2006.
30. Georgiy N. Shchegolev, "Using Self Organizing Maps in Phylogenetic Data Analysis", Undergraduate Research Project, completed Summer 2005.
31. Tazeen Fatima, "Consensus Trees in Phylogenetics", Undergraduate Research Project, completed Spring 2005.

TEACHING EXPERIENCE

Traditionally Taught Courses (Face to Face Learning):

Montclair State University (100-499 Undergraduate, 500 and above Graduate)

CSAM 102	Science Matters Too
CSIT 104/110	Computer Concepts for Information Technology
CSIT 430	Databases for Internet Applications
CSIT 440	Data Mining
CSIT 450	Text Management (using XML)
CSIT 491	Cooperative Education (over 15 students per year since 2012)
CMPT 109	Introduction to Computer Applications: Being Fluent with Information Technology
CMPT 183	Foundations of Computer Science I (Java I)
CMPT 184	Foundations of Computer Science II (Java II)
CMPT 300	Introduction to Scientific Databases
CMPT 483	Database Systems
CMPT 495	Special Topics in Computer Science: Data Mining
CMPT 495	Special Topics in Computer Science: Introduction to Bioinformatics
CMPT 495	Special Topics in Computer Science: Text Management: Perl and Bioinformatics Programming
CMPT 585	Special Topics in Computer Science: Data Mining
CMPT 585	Special Topics in Computer Science: Introduction to Bioinformatics
CMPT 585	Special Topics in Computer Science: Text Management: Perl and Bioinformatics Programming
CMPT 585	Special Topics in Computer Science: Business Intelligence
CMPT 586	File Structures and Databases
CSIT 655	Scientific Databases
SCIF 110	Introduction to Science Informatics
SCIF 152	Colloquium in Science Informatics II

SCIF 253	Colloquium in Science Informatics III
SCIF 491	Research Experience in Science Informatics I
SCIF 492	Research Experience in Science Informatics II

New Jersey Institute of Technology (100-499 Undergraduate, 500 and above Graduate)

CIS 113 Introduction to Computer Science I, Summer 2002, Fall 2002 (C++ Programming)
 CIS 114 Introduction to Computer Science II, Summer 2002, Summer 2004 (C++ Programming)
 CIS 350 Computers and Society, Summer 2000.
 CIS 601 Object Oriented Programming, Summer 2004 (C++ Programming)

Hybrid Courses Taught

Montclair State University

CSIT 104	Introduction to Computational Concepts (Summer 2014)
CSIT 355	Databases Systems (Fall 2014- Present – Offered in this format at least once, usually twice an academic year)
CSIT 555	Database Systems (Spring 2016)
CSIT 595	Special Topics in Computer Science: Information Retrieval and Search Engines (Summer 2015, 2018)
CSIT 595	Special Topics in Computer Science: Data Sciences (Summer 2017)
CSIT 595	Special Topics in Computer Science: Data Quality (Summer 2016)
CMPT 585	Special Topics in Computer Science: Business Intelligence (Summer 2014)
CMPT 585	Special Topics in Computer Science: Introduction to Bioinformatics (Summer 2013)

Distance Learning Courses Taught

Montclair State University

CMPT 109	Introduction to Computer Applications: Being Fluent with Information Technology (Summer 2012, 2013)
CSIT 104/110	Computer Concepts for Information Technology (Fall 2013)
CSIT 555	Database Systems (Fall 2015, 2017)

New Jersey Institute of Technology

CIS 350	Computers and Society (Fall 1999, Spring 2000, Summer 2000, Fall 2000, Spring 2001, Summer 2001)
CIS 431	Database System Design (Fall 2001)

COURSE AND CURRICLUM AUTHORSHIPS

Curriculum Authored

1. Ph.D. in Industrial Organization – Big Data Track, in submission, Fall 2018
2. Graduate Certificate in Computer Science Education, in submission, Fall 2018
3. Graduate Certificate in Computing Technology, Fall 2018
4. Bachelor of Science in Data Science - Major Program alteration of the Science Informatics Program – Fall 2018.
5. Graduate Certificate in Computer and Information Systems, Fall 2018
6. Master of Science in Computer Science - Information Technology Concentration, Fall 2012
7. Master of Science in Computer Science - Applied Information Technology Concentration (Professional Science Masters Affiliated), Fall 2013

Courses Authored

Montclair State University

SCIF 110	An Introduction to Science Informatics. Complies with General Education requirement for Interdisciplinary Scientific Issue course.
CMPT 102	New Student Experience in Computers and Campus Society (co-authored with Angel Gutierrez), Spring 2007.
CSAM 101	Science Matters (NSF Funded course development with a faculty Professional Learning Committee)
CSAM 102	Science Matters Too (NSF Funded course development with a faculty Professional Learning Committee)
CSIT 356	Data Sciences I: Computational Techniques in Data Sciences
CSIT 456	Data Sciences II: Data Engineering and Applied Data Sciences Techniques
CSIT 556	Data Sciences I: Computational Techniques
CSIT 557	Data Sciences II: Data Engineering and Applied Techniques
CSIT 450	Text Management
CSIT 550	Text Management
CSIT 656	Scientific Databases

New Jersey Institute of Technology

CMPT 744	Data Mining and Management in Bioinformatics, created Summer 2003. Distance learning materials created with Jason T.L. Wang. (Course offered Fall 2004, Fall 2005, Fall 2006 [and possibly subsequently].)
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MULTIMEDIA DISTANCE LEARNING COURSE MATERIAL

1. Katherine G. Herbert, “CSIT 555: Database Systems”, On-line course, Fall 2017.
2. Katherine G. Herbert, “CSIT 110: Computer Concepts for Information Technology”, On-line course, Fall 2013. (reclassified to CSIT 104).
3. Katherine G. Herbert and Hubert Johnson, “CMPT 109: Fluency with Information Technology”, Hybrid course notes, in progress. Used in CMPT 109 Hybrid course, Winter 2010-2013.
4. Katherine G. Herbert and Jason T.L. Wang, “CIS 744: Data Mining and Management in Bioinformatics : CD 1”, New Jersey Institute of Technology Instructional Technologies and Media Services, August 2003.

PROFESSIONAL SERVICE ACTIVITIES

University-Based Service:

University

- Global Education General Education Requirement Senate Sub-committee (Fall 2018)
- Graduate Program Alternative Curriculum Solutions Sub-committee (Fall 2018)
- Graduate Program Coordinator Definition of Duties Sub-committee (Fall 2017)
- Graduate Council (2017-Present)
- Career Services University Office Search Committee (2 Directors, Summer 2014)
- University Parking Review Committee (2004-2005)

College

- College of Science and Mathematics Curriculum Committee (2017-present)
- Chair, College of Science and Mathematics Curriculum Committee (2017-2018)
- Computer Science Representative, CSAM Research Committee, Spring 2012
- Computer Science Coordinator, LSAMP Program, Spring 2009-Fall 2012
- Department Specialist in Bioinformatics for the Science Informatics Coordinating Committee: January 2006 – present
- Member, Science Informatics Coordinating Committee, Fall 2004- December 2005
- Advisor to Science Informatics Students, Concentration in Computer Science, Fall 2004- December 2005

Department

- Course Coordinator for ABET Accreditation, CSIT 355 for Fall 2019 visit
- Undergraduate Advisor for Computer Science, Information Technology and Data Sciences(70 students for Fall 2018), 2004-present
- Graduate Program Coordinator, Online Programs, May 2017 – May 2018
- Graduate Program Coordinator, May 2012-2014
- Graduate Program Committee, May 2012-2014, 2017-2018
- Data Sciences Degree Program committee, Fall 2014-Present
- Space Committee, Spring 2015-Present
- Summer Chairperson (shared with two other faculty), Summer 2013
- Chairperson, Department Chairperson Search, 2012-2013
- Chairperson, Information Technology Faculty Search, 2013
- Chairperson, Instructional Specialist Search, Summer 2013
- Information Technology Faculty Search Committee Member, 2010, 2011
- Course Coordinator for CMPT 483 for ABET and Middle States Accreditation, 2014
- Course Coordinator for CMPT 483 and CMPT 493 for ABET and Middle States Accreditation, 2008
- Course Coordinator for CSIT 110 for Middle State Accreditation, 2010
- Assessment Committees for CMPT 109 and CMPT 183, 2009
- Faculty coordinator for Department trip to the Grace Hopper Celebration of Women in Computing (2007, 2008)
- CMPT 109 Challenge Exam Development Committee
- Committee for Proposed Ph.D. Program in Computational Sciences
- Undergraduate Advisor for Computer Science and Information Technology Majors, 2004-2018

Discipline Based Service

Grant Panel Reviews:

- National Science Foundation November 2008-2018 approximately 12 times
 - Note: Due to privacy issues, NSF has directed panelists to not disclose details other than participated in panel reviews. I have paneled across the DUE, CISE and Crosscutting Directorates. General information about these service activities can be furnished upon request.
- Department of Defense, Science, Mathematics and Research Transformation Scholarship Program, January 2018.
- Sokol Institute for Pharmaceutical Life Sciences, Fellows Proposal, July 2010

Discipline Based Organization Service

- New Jersey Big Data Alliance – University Member
- PSE&G Institute for Sustainability Sciences – Advisory Board

Conference and Journal Peer Publication Reviews:

- ACM SIGCSE 2011-2017
- Book Reviewer for Pearson/ Addison Wesley Publishing –Topic: Java Programming (Kolling and Barnes Objects First with Java: A Practical Introduction using BlueJ, March 2010)
- Bioinformatics Book Proposal Reviewer, CRC Press, 2008 and 2009.
- Knowledge and Information Systems Journal (KAIS 2005-present)
- Book Reviewer for Wiley & Sons Publishing –Topic: Java Programming
- The 2008 IEEE World Congress on Computational Intelligence
- International Journal of Data Mining and Bioinformatics (February, March 2007, April 2008)
- 17th European Conference on Machine Learning and the 10th European Conference on Principles and Practice of Knowledge Discovery in Databases (PKDD 2006)
- International Association of Science and Technology for Development Conference 2006
- The VLDB (Very Large Database) Journal (2004, 2005)
- The IEEE Fifth International Conference on Data Mining (ICDM 2005)

- The 28th Australasian Computer Science Conference 2005 (ACSC 2005)
- Information Sciences (Journal Published by Elsevier Publishing), Fall 2004
- 28th Australasian Computer Science Conference-2005, (ACSC2005)
- 2004 SIAM International Conference on Data Mining
- The Internet Encyclopedia, 2004
- The 14th International Conference for Intelligent Systems for Molecular Biology (ISMB 2003)
- Information Systems: Special Issue on Bioinformatics and Biological Data Management, June 2003
- The International Conference on Information Technology: Research and Education (ITRE 2003), August 2003
- The International Conference on Intelligent Systems for Molecular Biology, July 2003
- The 3rd SIAM International Conference on Data Mining, May 2003
- The IEEE International Conference on Data Mining, December 2002
- The IEEE 4th International Symposium on Multimedia Software Engineering, December 2002
- The International Journal on Computational Intelligence and Applications: Special Issue on Intelligent Systems, September 2002
- The 3rd International on Web-Age Information Management, August 2002
- The 6th Pacific-Asia Conference on Knowledge Discovery and Data Mining, May 2002
- The 2nd SIAM International Conference on Data Mining, April 2002
- The 14th International FLAIRS Conference, May 2001
- The IEEE International Conference on Data Mining, December 2001

Conference Committee Participation and Conference Session Chair Service:

- AAAS Conference on Science Education, Montclair, NJ, 2017 – Panel Chairperson
- Session Chair, IEEE BIGDATA, July 2014
- Program Committee, ACM Conference on Information and Knowledge Management Workshop for Ph.D. Students in Information and Knowledge Management, May-October 2008.
- Technical Committee Member, The 2008 IEEE World Congress on Computational Intelligence, June 2008.
- Program Committee Member, BIOCOMP'07- The 2007 International Conference on Bioinformatics & Computational Biology
- Session Chair, BIBE 2006, Arlington, Virginia, 2006
- Program Booklet Committee, ACM SIGMOD, June 2005
- Session Chair, CBGI 2005, Salt Lake City Utah, July 2005
- Session Chair, CCSC 2004, Baltimore, Maryland, October 2004
- Session Chair, CBGI 2003, Raleigh, North Carolina, 2003

COMMUNITY OUTREACH

- Boy Scout and Girl Scout Science Advisory Boards, 2018
- Mount Saint Domenic Academy: Keynote to students on watching Hidden Figures: A discussion of Women in Computing, October 4, 2017
- Saint Peter's University: Women in Science: One Woman's Journey. Keynote given to Women in STEM event, May 3, 2017
- Participant in the CSAM Visiting Scientist Program, have visited multiple schools
- Supported 8 high school students for a research experience (4 days a week, 2-4 per day) as a part of the MSU Westons Program, Summer 2015
- Supported 5 high school students for a research experience as a part of the MSU Westons Program, Summer 2014
- Supported 6 high school students for a research experience as a part of the MSU Westons Program, Summer 2013
- Taught an advanced computing class for high school students, Westons program, Summer 2013
- Presented "Computing and Your Career: What Computing Can Do For You?", December 16, 2013, Mt. St. Domenic Academy, Caldwell, NJ.
- Presented "What is my Career?". March 15, 2009, Holy Family Academy, Bayonne, NJ.

ASSOCIATION MEMBERSHIPS

Discipline-based memberships:

- Association for Computing Machinery (ACM) (member since 1996)
- The International Society of Computational Biology (ISCB) (member since 2005)
- Institute for Electrical and Electronic Engineers (IEEE) (member since 2001)
- American Society of Engineering Education, (January 2017- Present)

Honor Societies

Inducted to these societies as a student and have maintained membership

- Alpha Sigma Nu (The National Jesuit Honors Society – Spring 1997)
- Pi Mu Epsilon (The National Mathematics Honors Society – Spring 1997)
- Upsilon Pi Epsilon (The ACM International Computer Science Honors Society – Fall 2002)
- Beta Beta Beta (The National Biological Honor Society – Honorary Membership awarded from Saint Peter's College – April 2009).

REFERENCES

References can be provided upon request