Katherine Grace Herbert-Berger
(Katherine G. Herbert)
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 University, Jersey City, New Jersey

PROFESSIONAL EXPERIENCE

Montclair State University

Professor, School of Computing	September 2023 – Present
Director, Montclair Computer Science Education Hub	July 1, 2022 - Present
Associate Director, Bristol-Myers Squibb Center for Science Teaching and Learning PRISM: Professional Resources in Science and Mathematics	July 1, 2024 - Present
Associate Professor, Department of Computer Science	September 2011 – June 2023
Ph.D. Faculty, Ph.D. in Environmental Sciences and Management	September 2016 -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	September 2004 – Summer 2011
Director, Herbert Data Sciences Lab	September 2004 – Present

New Jersey Institute of Technology

Research Associate, Data Capabilities Group, EarthCube Research Group, 2019 - Present
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

SPONSORED RESEARCH AND GRANT ACTIVITY AND AWARDS

Funded Research Projects

1. PI for Montclair State University, "AI Powered Solar Eruption Center (SEC) of Excellence in Research and Education", NASA MIRO Program, 10/01/2024 to 09/30/2029, Haimin Wang, Leading PI for NJIT, Montclair Award: $125,000, complete award: $5,000,000.
2. PI, New Jersey Department of Education, "Montclair State University Computer Science Education Hub", April 1, 2025 – May 31, 2026, $280,000
3. PI, New Jersey Department of Education, "Montclair State University Computer Science Education Hub", June 15, 2024 – March 31, 2025, $300,000
4. PI, National Science Foundation, "Collaborative Research: CyberTraining: Pilot: Cyberinfrastructure-Enabled Machine Learning for Understanding and Forecasting Space Weather", September 1, 2023 – August 31, 2025, $46,996.00 (with NJIT – full award: $237,287)
5. PI, New Jersey Department of Education, "Montclair State University Computer Science Education Hub – Year 2", April 15, 2023 – March 31, 2024, $444.445.
6. Co-PI, New Jersey Department of Education, "Montclair State University Computer Science for Everyone Everywhere", April 15, 2023 – March 31, 2024, 2023, $333,333.

7. 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, June 1, 2022-May 31, 2026, $560,110 (with NJIT – full award $600,000).
8. 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. (Collaborative with Rutgers and NJIT – full amount $899,627)
9. PI, New Jersey Department of Education, "Montclair State University Computer Science Education Hub", June 15, 2022 – March 31, 2023, $333,335.
10. Co-PI, New Jersey Department of Education, "Montclair State University Computer Science for Everyone Everywhere", June 15, 2022 – March 31, 2023, $333,333.
11. 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.
12. 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.
13. 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, 2021, $300,000.
14. Senior Personnel, New Jersey Department of Health, "NJ Governor's Council for Medical Research & Treatment of Autism", November 2015-June 2018, $3,304,000.
15. PI, Montclair State University, "Developing Mobile Data Analysis Systems for Sustainability Sciences", June 2012, Grant Proposal Development Grant, $6,000.
16. 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.
17. 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).
18. PI, Sokol Faculty-Student Research Award, "Prediction of Modulators of Pyruvate Kinase in SMILES Text Using A Priori Methods", Fall 2006, $2,000.
19. PI, Sokol Faculty-Student Research Award, "A Study of Phylogenetic Tools for Genomic Nomenclature Data Cleaning", Summer 2006, $2,000.
20. PI, University Faculty-Student Research Award, "Automated Gene Processing and Exon Sequence Retrieval", Summer 2005, $2,000.

AWARDS

- Montclair State University, Inaugural Presidential Award for Civic and Community Engagement, May 2025
- 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 Research Assistantship Award from New Jersey Institute of Technology, Summer 2003
- Summer Research Assistantship Award from NSF Grant IIS-9988636, Summer 2003
- Summer Research Assistantship Award from NSF Grant IIS-9988636, Summer 202
- Summer Research Assistantship Award from NSF Grant IIS-9988636, Summer 2001
- Summer Research Award: New Jersey I-TOWER Project, Summer 2001
- The Computer Science Award, Saint Peter's College, Jersey City, New Jersey, May 1999

MEDIA FEATURES

- CS4NJ – October 2022 – New Jersey State Computer Science Education Hubs: https://cs4nj.org/nj-cs-hubs/
- Montclair State University, "Grants Provide More Than $1.2 Million for Computer Science Education", July 8, 2022, , https://www.montclair.edu/newscenter/2022/07/08/grants-provide-more-than-1-2-million-for-computer-science-education/

- 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, 2024.
2. T.J. Marlowe, K.G. Herbert-Berger, Transitioning into STEM: **A Guide for Graduate Education and Career Development.** Taylor Francis, in preparation, 2024.
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, 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. John A. MacHusky, Katherine G. Herbert-Berger, Understanding Online Learning Infrastructure in U.S. K-12 schools: A Review of Challenges and Emerging Trends, *International Journal of Educational Research*, 114 (1), Article 101993, May 2022.
2. 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.
3. 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.
4. Nina M. Goodey, Katherine G Herbert, Sarah M. Hall, C.K. Bagley, 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.
5. Katherine G. Herbert, Jason T.L. Wang. Biological data cleaning: a case study. *International Journal of Information Quality*, Vol 1, Issue 1, pp. 60-82, June 2007.
6. Katherine G. Herbert, Dorothy Deremer. Biological research through science informatics. pp. 177-181, *CUR Quarterly*, June 2006.
7. 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.
8. Sen Zhang, Jason T.L. Wang, Katherine G. Herbert. XML Query by Example. *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. Sumi Hagiwara, Minsun Shin, Katherine G. Herbert, "Unpacking the Computer Science Education Standards Across Grade Levels", the 2025 IEEE Frontiers in Education (IEEE FIE '25), November 2025 – Accepted.
2. Ramy Othman, Katherine G. Herbert, and Thomas J. Marlowe, " An LSTM Model for Sustainable Microgrid Energy Resources in Myanmar", *the 2025 IEEE Conference on Artificial Intelligence (IEEE CAI),* May 2025.
3. Adam O. Rawashdeh, Jason T. L. Wang, "Explainable Artificial Intelligence in Deep Learning-Based Solar Storm Predictions", *38th Florida Artificial Intelligence Research Society Conference (FLAIRS '38*), May 2025.
4. Ted Samaras, Katherine G. Herbert, Vaibhav K. Anu, Sumi Hagiwara, Rebecca A. Goldstein and Stefan Robila, Jason T.L Wang and Vincent Oria , Thomas J Marlowe, Understanding Multidimensional Concepts through Game-Based Learning in the K-12 Curriculum", *the 15th Annual IEEE Integrated STEM Education Conference (IEEE ISEC)*, Princeton, NJ, March 15, 2025.
5. Alaina Cannella, Esther Douglass, Katherine Herbert, Vaibhav Anu, Sumi Hagiwara, Thomas J Marlowe, Stefan Robila, Rebecca A Goldstein "Integrating Computational Thinking and Engineering Design in STEM: Exploring Logistics and Societal Impact", *the 15th Annual IEEE Integrated STEM Education Conference (IEEE ISEC)*, Princeton, NJ, March 15, 2025.
6. Minsun Shin, Rebecca A. Goldstein, Katherine G. Herbert, Sumi Hagiwara, "Bridging Isolation: The Power of Professional Learning Community in Supporting Computer Science Teachers", *the 15th Annual IEEE Integrated STEM Education Conference (IEEE ISEC)*, Princeton, NJ, March 15, 2025.
7. Angela Brantley; Katherine G. Herbert, Vaibhav Anu, Sumi Hagiwara, Stefan Robila and Rebecca Goldstein, Jason Wang, Thomas J Marlowe, "Space Explorers: A Web-based Platform to Supports Space Weather Education Through Storytelling Data Visualization", *the 15th Annual IEEE Integrated STEM Education Conference (IEEE ISEC)*, Princeton, NJ, March 15, 2025.
8. Lynn Hazelman, Rebecca Goldstein, Vaibhav Anu, Katherine G. Herbert, Stefan Robila, Sumi Hagiwara, Thomas J Marlowe." Exploring Solar Weather through Gamified Folklore and Science with Scratch, *the 15th Annual IEEE Integrated STEM Education Conference (IEEE ISEC)*, Princeton, NJ, March 15, 2025.
9. Julia Rodano and Katherine G. Herbert "Enhancing RF Classifier Security: Machine Learning-Based Detection of Spoofing and Jamming Attacks", *the 15th Annual IEEE Integrated STEM Education Conference (IEEE ISEC)*, Princeton, NJ, March 15, 2025.
10. Margaret Mary S. Menichella, Stefan Robila, Katherine G. Herbert, Vaibhav Anu, Sumi Hagiwara, Rebecca Goldstein, Thomas J Marlowe, "Simplifying Space Weather for Students - A Cross-Curricular Resource for all Middle School Students, *the 15th Annual IEEE Integrated STEM Education Conference (IEEE ISEC)*, Princeton, NJ, March 15, 2025.
11. John Brown, Katherine G. Herbert, Vaibhav Anu, Rebecca Goldstein, Sumi Hagiwara, Stefan Robila (Montclair State University, USA); Thomas J Marlowe, "Utilizing modern STEM tools and devices to promote space weather awareness across K-12 grade levels: A work-in-progress report*", the 15th Annual IEEE Integrated STEM Education Conference (IEEE ISEC)*, Princeton, NJ, March 15, 2025.
12. James Liporace, Katherine G. Herbert, Vaibhav Anu, Rebecca Goldstein, Sumi Hagiwara, Stefan Robila; Thomas J Marlowe, "Teaching AI to Non-STEM Students: A General Education Approach Using Space Weather and Low-Code Tools", *the 15th Annual IEEE Integrated STEM Education Conference (IEEE ISEC)*, Princeton, NJ, March 15, 2025.
13. Angela S. Williams-Nash , Sumi Hagiwara, Katherine G. Herbert, Thomas Marlowe, Rebeca A. Goldstein, Vaibhav K. Anu, Stefan Robila, "Preparing K-8 Teachers to Teach and Infuse, Computer Science Across All Subjects", *the ACM Special Interest Group in Computer Science Education (SIGCSE) Technical Symposium 2025, Pittsburgh, PA, February 26-March 1, 2025.*
14. Vinay Ram Gazula, Katherine G. Herbert, Yasser Abduallah and Jason T.L. Wang., "Interpretable Deep Learning for Solar Flare Prediction, *the 36th IEEE International Conference on Tools with Artificial Intelligence (IEEE ICTAI)*, Herndon, Virginia, October 28-30th, 2024
15. Katherine G. Herbert, Vaibhav K. Anu, Stefan Robila, Sumi Hagiwara, Rebecca A. Goldstein, Minsun Shin, Jason T.L. Wang , Thomas J. Marlowe, K-12 Teachers and Data Science: Learning Interdisciplinary Science through Research Experiences, t*he American Association of Engineering Education, (ASEE 2024)*, Portland, Oregon, June 2024.
16. Esther Douglass, Katherine Herbert, Vaibhav K. Anu and Thomas J. Marlowe. "Solar Weather, Simulation, and AI in Middle School: Developing a Case Study", the ACM SIGCSE Technical Symposium 2024, Portland, Oregon, March 2024
17. Ted Samaras, Thomas J. Marlowe, Katherine G. Herbert, Vaibhav K. Anu, Sumi Hagiwara, and Stefan A. Robila. Interdisciplinary Synergy: Resources for Embedding Plugged and Unplugged Computer and Data

Science Activities into the K-12 Curriculum. *IEEE Integrated STEM Education Conference,* Princeton NJ, March 2024.

18. Angela Brantley, Katherine G. Herbert, Vaibhav K. Anu, Sumi Hagiwara, Stefan A. Robila, Jason T.L. Wang. Understanding Space Weather Through Storytelling Data Visualization. *IEEE Integrated STEM Education Conference,* Princeton NJ, March 2024.
19. Esther Douglass, Alaina Cannella, Katherine G. Herbert, Vaibhav Anu, Sumi Hagiwara, Thomas Marlowe, Stefan Robila. Design and Implementation of a STEAM Robotics Lesson on the Spotted Lanternfly: Engineering a Computer Science Solution. *IEEE Integrated STEM Education Conference,* Princeton NJ, March 2024.
20. Margaret Mary S. Menichella , Stefan A. Robila and Katherine G. Herbert, Thomas Marlowe. Creating a Cross Curricular Resource for Solar Weather History and Its Impact on Daily Life. *IEEE Integrated STEM Education Conference,* Princeton NJ, March 2024.
21. Corina Drozdowski, Thomas J. Marlowe, Katherine G. Herbert, Vaibhav K. Anu, Sumi Hagiwara, Stefan A. Robila. The APP Method: Self-Regulation Strategies Giving POWER to Computer Science Students. *IEEE Integrated STEM Education Conference,* Princeton NJ, March 2024.
22. Solomon Emeghara, Sumi Hagiwara, Stefan Robila, Katherine G. Herbert, Thomas Marlowe, Vaibhav K. Anu. A Cyber-Physical Systems Approach to Teaching Solar Weather Topics in Middle School. *IEEE Integrated STEM Education Conference,* Princeton NJ, March 2024.
23. Minsun Shin, Sumi Hagiwara, Katherine G. Herbert, Vaibhav Anu, Rebecca Goldstein and Kazi Zakia Sultana "Drawing a computer scientist: Assessing the images of the computer scientist among K-8 teachers", Frontiers in Education, College Station, Texas, October 2023.
24. Vaibhav K. Anu, Sumi Hagiwara, Katherine G. Herbert. "Teachers' Perception and Vision of Computer Science Education in K-8 Schools", IEEE I-ETC, Provo, Utah, May 2023.
25. Sumi Hagiwara, Katherine G. Herbert, Minsun Shin, Rebecca Goldstein, Patricia Virella, Amy DeFelice, Vaibhav K.Anu, Kazi Zakia Sultana. K-8 Computer Science Attitudinal Survey for Teachers: Integrating in Diversity, Equity, Inclusion, and Belonging, *2023 American Educational Research Association Annual Conference*, Chicago, IL, April 2023.
26. Katherine G. Herbert, Sumi Hagiwara, Elizabeth M Rogacki, Thomas J Marlowe. Creating an Appropriate Computer Science and Computational Thinking Graduate Curriculum for K-12 Teachers: Context and Initial Results. [Internet]. *IEEE Integrated STEM Education Conference,* Princeton NJ, 2022 March 2022.
27. Katherine G. Herbert-Berger., Thomas J. Marlowe, Kees Leune, Robert M. Siegfried, Jeanette Wilmanski. Interdisciplinary STEM Undergraduate Programs and the Effectiveness of Computing Competencies within the Curriculum. [Internet]. *IEEE Integrated STEM Education Conference*, Princeton NJ, March 2021. Available from: https://ewh.ieee.org/conf/stem/program.html
28. Robert M. Siegfried, Katherine G. Herbert-Berger, Kees Leune. Trends Of Commonly Used Programming Languages in CS1 And CS2 Learning.*16th International Conference on Computer Science & Education (ICCSE 2021),* Lancaster, United Kingdom, August 2021. Available from: http://www.ieee-iccse.org/About /committee.html?_v=1629311154001
29. 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 Fereira, 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, "*Machine Learning in Heliophysics and Space Weather Forecasting: A White Paper of Findings and Recommendations*", Cornell University, June 22, 2020, https://arxiv.org/abs/2006.12224
30. 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.
31. 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.
32. 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.
33. 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.

34. 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.
35. 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.
36. Marvin Lapeine, Katherine G. Herbert, Emily Hill, Nina M. Goodey. Mobile interaction and query optimization in a protein-ligand data, *Proceedings of the 2013 ACM SIGMOD International Conference on Management of Data*, pp. 1291-1292, June 2013 New York, New York, USA.
37. Robert M. Siegfried, David M. Chays, Katherine G. Herbert. Will There Ever Be Consensus on CS1?, *Proceedings of the 2008 International Conference on Frontiers in Education: Computer Science and Computer Engineering*, pp. 529-535, July 2008, Las Vegas, Nevada.
38. Jason T.L. Wang, Dongrong Wen, Bruce Shapiro, Katherine G. Herbert, Jing Li, Kaushik Gosh. Toward an Integrated RNA Motif Database, *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.
39. Xiaoming Wu, Katherine G. Herbert, Jason T. L. Wang. A New Kernel Method for RNA Classification, Proceedings *of the IEEE 6th Symposium on Bioinformatics and Bioengineering*, pp. 201-208, October 2006, Arlington, Virginia.
40. Sen Zhang, Katherine G. Herbert, Jason T.L. Wang, William H. Piel, David R.B. Stockwell. PhyloMiner: a tool for evolutionary data analysis, *Proceedings of 18th International Conference on Scientific and Statistical Database Management*, pp. 127-132, July 2006, Vienna, Austria.
41. Dorothy Deremer. Katherine G. Herbert. An Interdisciplinary Undergraduate Science Informatics Degree in a Liberal Arts Context, *Proceedings of the 37th Technical Symposium on Computer Science Education*, Houston, Texas, March 2006.
42. Katherine G. Herbert, Jason T.L. Wang. Phylogenetic Information Integration: Research Issues and Techniques, *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.
43. Katherine G. Herbert, Shashikanth Pusapati, Jason T. L. Wang, William H. Piel. Lineage Path Integration for Phylogenetic Resources, *Proceedings of 17th International Conference on Scientific and Statistical Database Management*, pp. 117-120, June 2005, Santa Barbara, California.
44. Jianghui Liu, Jason T.L. Wang, Wynne Hsu, Katherine G. Herbert. XML Clustering by Principle Component Analysis, *Proceedings of the 16th IEEE International Conference on Tools with Artificial Intelligence*, pp. 658-662*,* November 2004, Boca Raton, Florida.
45. Katherine G. Herbert, John Westbrook, Jason T.L. Wang. Data Integration in Biological Databases, *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.
46. Huiyuan Shan, Katherine G. Herbert, William Piel, Dennis Shasha, Jason T.L. Wang. A Structure-Based Search Engine for Phylogenetic Databases, *Proceedings of 14th International Conference on Scientific and Statistical Database Management*, pp. 7-10, July, 2002, Edinburgh, Scotland.
47. Katherine G. Herbert, Huiyuan Shan, Jason T.L. Wang. Approximate Searching in Phylogenetic Databases, *Proceedings of the Atlantic Symposium on Computational Biology and Genome nformation Systems & Technology*, pp. 140-143, Durham, North Carolina, March 2001.

SOFTWARE AUTHORED

1. MATCH, Mobile Assistant Aide for Transformation, Communication and Health, May 2020, with Joshua M. Schappel, Ryan Nicolosi, Thomas Marlowe, and Robert M. Siegfried.
2. NJ Autism Center of Excellent – Information Technology Coordinator with Jerry A. Fails.(2016-2018)
    a. Part of team that created and maintained a web-based data repository for all research sites and medical homes that were a part of the center.
    b. Supported data reporting and coordination of I 25 research sites for autism, all funded by the NJ Department of Health and Human Services, including location Children's Hospital of Philadelphia,

Rutgers University, Children's Specialized Hospital, St. Peter's University Hospital, Rowan University, Center for Neurological and Neurodevelopment Health, and William Paterson University.
   c. Supported data reporting and coordination with two autism medical homes including Hackensack Meridian Hospital and Children's Specialize Hospital.
   d. Worked with the larger team for coordinating center events and general activities.
   e. Coordinated technology team of two students.
3. Geotagger and Mobile Sustainability Toolkit, with Emily Hill, Jerry Fails, and Jennifer Bragger. 2012-present.
4. 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
5. Automated Gene Sequence Retrieval System, advised students Tazeen Fatima, Jonathan Marra, Ronald Realubit and Georgiy N. Shchegolev, Fall 2005 – Summer 2006.
6. BIO-AJAX for Lineage Paths, Dissertation research. Authored by Katherine G. Herbert, May 2004, significantly revised, January 2005.
7. BIO-AJAX for TreeBASE, Dissertation research. Authored by Katherine G. Herbert, November 2003.
8. 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. Katherine G. Herbert, Vaibhav K. Anu, Kazi Zakia Sultana, Stefan Robila, Jesse Ryan Miller, Sumi Hagiwara, Rebecca A. Goldstein, Thomas J. Marlowe. Professional and Capacity Building in K-12 Computer Science Education: A Multi-Faceted Approach, *ACM SIGCSE '23: Proceedings of the 54th ACM Technical Symposium on Computer Science Education*, Toronto, Canada, March 2023, Accepted.
2. Robert M. Siegfried, Katherine G. Herbert, Jason Siegfried. CS2 and the Impact of Programming Language Choice, *ACM SIGCSE '20: Proceedings of the 51th ACM Technical Symposium on Computer Science Education*, Portland, Oregon, March 2020.
3. Katherine G Herbert-Berger, Nina M Goodey, Stephen Ruczszyk, Scott Kight, 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.
4. Robert M. Siegfried, Diane Liporace, 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.
5. 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
6. 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).
7. Jason Caronna, Rojita Sharma, Jonathan Marra, Virginia L. Iuorno, Katherine G. Herbert, Jeffrey H. Toney. Prediction of Modulators of Pyruvate Kinase in SMILES Text Using A priori 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)
8. Jonathan D. Marra, Katherine G. Herbert, 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)
9. Tazeen Fatima, Jonathan Marra, Ronald Realubit, Georgiy Shchegolev, Katherine G. Herbert (faculty mentor). Automated Gene Processing and Exon Sequence Retrieval. 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.
10. Jason T.L. Wang, William H. Piel, 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.
11. Katherine G. Herbert, 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.

12. Katherine G. Herbert, Biological Data Quality Research in the Department of Computer Science, College of Science and Mathematics Newsletter, Montclair State University, Montclair NJ, Spring 2005.
13. 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 WHERE PRESENTING AUTHOR

1. Katherine G. Herbert, Vaibhav K. Anu, Kazi Zakia Sultana, Stefan Robila, Jesse Ryan Miller, Sumi Hagiwara, Rebecca A. Goldstein, Thomas J. Marlowe. Professional and Capacity Building in K-12 Computer Science Education: A Multi-Faceted Approach, *ACM SIGCSE '23: Proceedings of the 54th ACM Technical Symposium on Computer Science Education*, Toronto, Canada, March 2023, Accepted.
2. Katherine G. Herbert, Sumi Hagiwara, Elizabeth M Rogacki, Thomas J Marlowe. Creating an Appropriate Computer Science and Computational Thinking Graduate Curriculum for K-12 Teachers: Context and Initial Results. [Internet]. *IEEE Integrated STEM Education Conference,* Princeton NJ, 2022 March 2022.
3. Katherine G Herbert-Berger, Nina M Goodey, Stephen Ruczszyk, Scott Kight, 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.
4. Robert M. Siegfried, Diane Liporace, 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.
5. 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*, Montclair NJ, May 2018.
6. Katherine G. Herbert, Thomas J Marlowe, et.al. Engaging in Computer Science and Information Technology Program, *ASEE 2017: American Society for Engineering Education Annual Meeting*, June 25-28, 2017, Columbus, Ohio.
7. 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.
8. Katherine G. Herbert. Scientific Data Infrastructure for Sustainability Science Mobile Applications, *IEEE 3rd International Congress on Big Data*, June 27 - July 2, 2014, Anchorage, Alaska, USA.
9. Katherine G. Herbert. DrugTree: A phylogenetic platform to study protein-ligand binding relationships in the drug discovery process, *The International Society of Computational Biologist's Conference on Semantics in Healthcare and Life Sciences*, Boston, MA., February 23-25, 2011
10. Katherine G. Herbert. 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.
11. Katherine G. Herbert. Automated Taxonomy Generation for Summarizing Multi-type Relational Datasets, presented on behalf of Tao Li and Sarabjot S. Anand, *4th International Conference on Data Mining*. Las Vegas, Nevada, July 15, 2008.
12. Katherine G. Herbert, James H. Dyer (joint presentation). 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.
13. Katherine G. Herbert. A Support Vector Machine Method to Classify Enzyme Modulators, *ISCB 5th Annual Rocky Mountain Bioinformatics Conference*, Snowmass, Colorado, December 1, 2007.
14. Katherine G. Herbert, Toward an Integrated RNA Motif Database, *4th International Workshop of Data Integration in the Life Science Workshop*, Lecture Notes in Computer Science, June 27, 2007, Philadelphia, Pennsylvania.
15. Katherine G. Herbert. A New Kernel Method for RNA Classification, *IEEE 6th Symposium on Bioinformatics and Bioengineering*, October 14, 2006, Arlington, Virginia.
16. Katherine G. Herbert. PhyloMiner: a tool for evolutionary data analysis, *18th International Conference on Scientific and Statistical Database Management*, July 3, 2006, Vienna, Austria.
17. Katherine G. Herbert, Dorothy Deremer, Charles Du, James H. Dyer, Aihua Li. What is Science Informatics?, *2005 New Jersey Science Convention*, Garden State Exhibition Center, Somerset, NJ, October 5, 2005.

18. Katherine G. Herbert, Dorothy Deremer, Charles Du, James H. Dyer, Aihua Li. Developing a New Jersey Science Informatics Curriculum at Montclair State University, *2005 New Jersey Science Convention*, Garden State Exhibition Center, Somerset, NJ, October 5, 2005.
19. Katherine G. Herbert. 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.
20. Katherine G. Herbert, James H. Dyer. Science Informatics at Montclair State University, *DIMACS Conference on Linking Mathematics and Biology in the High Schools*, Rutgers University, New Brunswick, New Jersey, April 29, 2005.
21. Katherine G. Herbert. XML Clustering by Principal Component Analysis, IEEE *16th International Conference on Tools in Artificial Intelligence*, Boca Raton, Florida, USA, November 17, 2004.
22. Katherine G. Herbert. Data Cleansing and Knowledge Bases, *4th Emerging Information Technologies Conference*, Princeton, New Jersey, USA, October 30, 2004.
23. Katherine G. Herbert. 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.
24. Katherine G. Herbert. 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.
25. Katherine G. Herbert. 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.
26. Katherine G. Herbert. ATreeGrep: Approximate Searching in Unordered Trees, *IEEE 14th International Conference on Scientific and Statistical Database Management*, July 24, 2002, University of Edinburgh, Edinburgh, Scotland.
27. Katherine G. Herbert. Approximate Searching in Phylogenetic Databases, *Atlantic Symposium on Computational Biology and Genome Information Systems & Technology*, Durham, North Carolina, March 16, 2001.

STUDENT RESEARCH PRESENTATIONS

1. Gelber Castillo, Predicting Solar Flares with Machine Learning, Space Grant Consortium, Rutgers University, New Brunswick, April 29, 2022
2. Gelber Castillo, Predicting Solar Flares with Machine Learning, Casabona Future Scientist Competition, Montclair State University, Montclair NJ, April 27, 2022
3. Gelber Castillo, Predicting Solar Flares with Machine Learning, LSAMP Student Presentations, Montclair State University, Montclair NJ Space Grant Consortium, Rutgers University, New Brunswick, April 2022
4. Joshua M. Schappel, T.J. Marlowe, K.G. Herbert-Berger, Wearable Devices for Autism Spectrum Disorder. Mathematics, Computer Science, and Data Science Student Research Showcase, Abstract in *Matthew Petersheim Academic Exposition*, Seton Hall University, April 24, 2020.
5. Ryan Nicolosi, MATCH, Mobile Assistant Aide for Transformation, Communication and Health, Casabona Future Scientists Competition, Montclair State University, Montclair, NJ, April 2018.
6. 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.

INVITED PRESENTATIONS

1. "Data Sciences in K-12 Education", with Sumi Hagiwara, New York Data Analysis and Technical Group Annual Meeting, Saratoga Springs, New York, July 2023
2. "Route Maps for Effective and Sustained Transdisciplinary Communication", with Fr. Joseph R. Laracy, Thomas J. Marlowe, and Susu Nousala, IIIS WMSCI Plenary Session, July 2022.
3. The Status of Computer Science Education, AAAS/NSF Stimulating Research and Innovation for Preservice Education of STEM Teachers in High-Need Schools conference, 12 June 2017 at Montclair State University. Montclair, NJ
4. Gender Gaps in the Sciences, St. Peter's University, May 2017, Jersey City, New Jersey

5. Mount St. Dominic Academy (Caldwell NJ): Keynote to students on watching Hidden Figures: A discussion of Women in Computing, October 4, 2017.
6. NJ Academy of Sciences in May 2014 – Graduate Pathways into Graduate Computer Science Education

NJ DOE FUNDED COMPUTER SCIENCE EDUCATION HUB AND COMPUTER SCIENCE FOR EVERYONE EVERYWHERE PROFESSIONAL DEVELOPMENT SESSIONS – OVER 100 SESSIONS OFFERED SINCE JUNE 2022.

SAMPLE LIST OF WORKSHOPS I HAVE EITHER OFFERED OR COORDINATED THROUGH THIS PROGRAM:

Dates	Topic
July 12 - 14, 2022, July 19, 2022 - July 21, 2022	Summer Standards Workshop Series
August 3, 2022	Introduction, Unpack Standards, CT
August 3, 2022	PLC Orientation and Computer Systems
September 7, 2022	Impacts of Computing
September 19, 2022	Grades K2 - Finding Computer Systems Everywhere: Introducing K-2 to Computer Science
September 20, 2022	Grades 6-8: Beginner CS in Middle School
October 18, 2022	Grades 3-5: Computer Science Through Computational Thinking
November 7, 2022	Grades6-8: Algorithms and Programming
November 14, 2022	All Grades: Performance Based Assessment for Computer Science Standards
November 21, 2022	Grades 9-12: Data analysis and Algorithms
December 13, 2022	Grades K-5: CS Plugged and Unplugged
January 9, 2023	Grades K2: Pattern Recognition and Introduction to Coding
February 7, 2023	Grades 3-5: Understanding the WWW (Networks and Technology)
February 22, 2023	Pathways to CS - Pre-service teachers
February 27, 2023	Counselors: Supporting Inclusive CS Education
March 13, 2023	Grades 6-8: Networks and Technology
March 14, 2023	Morning-Admins: Developing District's Mission in Computer Science
March 22, 2023	Real World Problem Solving with CS
May 22, 2023	Interdisciplinary relationships with CS Standards
Tues, Aug 22 - Thurs, Aug 24, 2022	CS Education Standards
September 19, 2023	Artificial Intelligence, ChatGPT and the Future of Learning
October 10, 2023	Algorithms and Programming
Thur, October 19	K-2 Primer PD
October 24, 2023	Curriculum Hackathon
November 17, 2023	Microbit #2
November 29, 2023	Grade 3-5 Primer PD

December 4, 2023	Buddy Programming
January 24, 2024	6-8 primer PD
February 5, 2024	AI in the Classroom Trench: How to Use Artificial Intelligence with Students- For teachers by teachers
February 8, 2024	High School Primer
February 9, 2024	NJECC
February 28, 2024	Community Computing and Informal Learning
March 4, 2024	Hands On Computer Science
July 22, 2024	A Day of AI and Space Weather
8/20/24-8/22/24	CS Summer Institute for new faculty
September 24, 2024	Cybersecurity and Sextortion with the FBI
September 27, 2024	Principles of Computing (POCS): Computer Systems
October 15, 2024	Applied Computing: Aviation
October 23, 2024	Hack-a-thon: Infuse AI
November 1, 2024	Deep Dive - MicroBit Devices
November 15, 2024	POCS: Algorithms & Programming
December 6, 2024	POCS: Impacts of Computing
December 11, 2024	Buddy Programming
December 13, 2024	NJ CS Education Summit
January 14, 2025	POCS: Networks and Internet
February 4, 2025	Mobile Programming with Apple & 4H\
February 7, 2025	Good Success Academies College Planning Institute Conference Workshop – Students from Montclair and Bloomfield
March 7, 2025	POCS: Data and Analysis
March 13, 2025	A Day of Computing (FOR STUDENTS)

COLLOQUIA, SEMINARS, AND CAMPUS PRESENTATIONS

1. Office of Faculty Excellence, OFE Presents Katherine Herbert on Effective On-line Discussion, https://www.youtube.com/watch?v=8-k6FbUxRhU , May 2022
2. STEM Pioneers Science Matters Presentation, “Opportunities in Computer Science at Montclair”, September 2021.
3. STEM Pioneers Science Matters Presentation, “My Pathway into Computer Science Research”, November 2020.
4. Office of Faculty Engagement: “Hawk Mix for Database Systems: An Example for Scheduling a Course in Hy Flex Mode”, created July 2020, recorded and shown by OFE on demand.
5. “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.
6. “Insights into Computer Science Graduate Studies”, Workshop for Montclair State University NSF iMagine REU Students, July 1, 2008.
7. “Insights into Computer Science Graduate Studies”, Workshop for Montclair State University NSF iMagine REU students, July 11, 2007.

8. "Bioinformatics Activities in Computer Science", Outreach Workshop for High School students participating in an admission day at Montclair State University, December 8, 2006.
   "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.
9. Multiple departmental and interdisciplinary seminars and presentations, Montclair State University Department of Computer Science, and College of Science and Medicine.

STUDENT RESEARCH MENTORING

Graduate Research and Culminating Experience (thesis, project, or literature search)

1. Nesreen Salah, "Cybersecurity issues in biological and biomedical data sets", Master's Project, Fall and Spring 2023
2. Daniel Stratthaus, "Improving access to Canvas by non-Institutional participants", Master's Project, Fall and Spring 2023.
3. Mamta Chauhan, "Patterns in Autism Data Sets", Master's Project, Fall and Spring 2023.
4. John Acocella, "Deep Learning Data Explorations", Master's Project, Spring 2023.
5. Tyler Dorsett, "Deep Learning in Space Weather Data Sets" Master's Project, Spring 2023.
6. Prit Shah, "Plastic Recycling Mobile Application", Master's Project, December 2022.
7. Sreeja Mamidala, "A Weather Application to Understand Climate Change Patterns", Master's Project, Summer 2022.
8. Shay Ojewale, "Sequence Based Digital Signatures: An Agent Oriented Perspective", Master's Project, Summer 2022.
9. Phoebe Huang, "Using Decision Trees To Predict MLB Cy Young Award Winners", Master's Project, Fall 2021.
10. Dan Belenski, "Physics education mobile Application", Master's Project, Fall 2021.
11. John A. Machusky, "Online Learning Infrastructure in K-12 Schools", Master's Project, Fall 2021
12. Shivam Patel, "Utilizing Data Mining Techniques on Genetic Data to Understand Translator and Polarity distributions", Master's Project, Fall 2021.
13. Sravanthi Vodithala, "Deep Learning in Big Data Applications", Master's Project Spring 2018.
14. Allan Gomes, "Accessibility Guidelines/Influence on Autism", Master's Project Spring 2018.
15. James Liporace, "Mathematical Modeling in AI Algorithms", Master's Project, December 2017.
16. Donald Jason Seraydarian, employed research student in Herbert Lab for work on data visualization on the DrugTree Project. Graduate Research continuation of Undergraduate Research, 2012-2017.
17. Riad Jeredoh, "Data Modeling in the GeoTagger environment", Master's Project, December 2016.
18. Chante Stewart-Wallace, "Data Mining and Predictive Policing", Master's Thesis, Spring 2019.
19. Diane Liporace, "Object Oriented Programming- A Survey of Experiences with Language Choice", Master's Project, November 2018.
20. Jesse Ryan Miller, "Cybersecurity Threats in Higher Education", Master's Literature Survey, May 2018.
21. Daniel Ramalhosa, "DrugTree Systems Migration", Master's Project, February 2018.
22. Elizabeth Rogacki, "CS High School Education Across the United States", Master's Literature Survey, May 2017.
23. Jonathan Chen, "Using Digital Forensics to gather Digital Evidence for Crimes", Master's Literature Survey, May 2017.
24. Clinton C. Dudley, "The Interactions of Commensality and Technology in Modern Life", Master's Literature Survey, May 2017.
25. Andrew Friedman, "Machine Learning in Neural Networks: Fundamentals, History and Evolution in Neural Network Studies", Master's Literature Survey, May 2017.
26. Palak Patel, "Data Mining Systems and Platforms, and Their Efficiency, Scalability, Security and Privacy", Master's Literature Survey, May 2017.
27. Mira B. Shah, "Use of Cloud Technologies for Scientific Applications", Master's Literature Survey, May 2017
28. 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.
29. Andrew DeStefano, "GeoTagger API for Public Release", Master's Project, May 2016.
30. Alcina Memar, "A Web Portal for User Data Design for a Mobile Sustainability Toolkit", Master's Project, May 2016.
31. Colin Scheriff, "Usability Modifications in DrugTree", Master's Project, Fall 2015.

32. Aliet Cruz-Abreu, “A Web Portal for Synchronizing Data from a Mobile Sustainability Toolkit”, Master's Project, Fall 2014.
33. Joseph Ajala, “Design and Implementation of Scientific Data”, Master’s Project, Spring 2013.
34. Richard Boniface, “A Data Interface for the Sustainability Studies Mobile Toolkit”, Master’s Project, Spring 2013.
35. Zareta Gochiyaeva, “Drug Tree: A Phylogenetic Platform to Study Protein-Ligand Relationships in the Drug Discovery Process”, Master’s Project, Spring 2013.
36. Paul Singleton, “Development of a User Interface and Toolkit to Compare Enzymes and Their Corresponding Ligands and Inhibitors”, Master’s Project, Spring 2013.
37. Shreya Achar, “Integrating genetic databases and aid in designing the data integration facilities”, Master’s Project, completed May 2010.
38. Omer Metin Opaydin. “Applying Exploratory Data Mining Techniques on RNA Data”, Master’s Project, completed February 2009.
39. Brian Dugdale, “Biological Data Warehousing”, Master’s Project, completed May 2008.
40. Virginia L. Iourno, “Biomolecular Data Mining and Knowledge Discovery Applied to Enzyme Modulation”, Master’s Project, completed Spring 2007.

Undergraduate Research Experience

41. Juhi Mehta, “Deep learning techniques to understand patterns in Spotify music samples”, Undergraduate Project, Spring 2022.
42. Daniel S. Delgado, “Investigations into the Internet of Things & Data Security Topics”, Undergraduate Project, Spring 2020.
43. Jacob O’Brien: “Data Quality techniques in solar weather data sets”, Undergraduate Project, Spring 2019.
44. Justin Baratta, “Data Acquisition techniques in Big Data”, Undergraduate Project, Spring 2019
45. Cristofer Lombardo, “Food Soil Collect data and data management”, Undergraduate Project, Spring 2019.
46. Logan J. Morales, “A Study of Data Security Applications as Related to the IT Industry”, Undergraduate Project, Summer 2019
47. Andrew Sigalas, “Mobile Application Development in Autism Research”, Undergraduate Project, Summer 2019
48. Maxim Antov “Drone Connectivity to Geotagger App”, Undergraduate Project, April 2017 and December 2018.
49. Kevin Phelan, “A Web Application for Municipal Arborists”, Undergraduate Project, August 2018.
50. Ryan Nicolosi, “MATCH: A mobile application for mainstream society interested in helping autistic individuals”, Undergraduate Research, April 2018 (Finalist in Casabona Future Scientist Award). Research conducted from April 2016-2018.
51. Olga Glavna, “Mobile application implementation of Sentiment analysis techniques in sustainability”, Undergraduate Project, Spring 2017.
52. 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).
53. 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.
54. Maryam Aziz, “Developing an interactive interface for a pharmacophylogenetic tool”, Undergraduate Project, Fall 2009-Spring 2010.
55. Shekerah Primus and Frantz FIls-Aime, “Creating a database to assist in the statistical analyses of biological research data”, Undergraduate Project, completed May 2008
56. Jonathan Marra, “Sensitivity of Phylogenetic Tools for Gene Nomenclature Research”, Undergraduate Project, completed Summer 2007.
57. Jonathan Marra, “Automated Gene Sequence Retrieval System”, Undergraduate Research Project, completed Summer 2006.
58. Tazeen Fatima, Jonathan Marra, Ronald Realubit and Georgiy N. Shchegolev, “Automated Gene Sequence Retrieval System”, Science Informatics Undergraduate Research Experience, Fall 2005 – Spring 2006.
59. Georgiy N. Shchegolev, “Using Self Organizing Maps in Phylogenetic Data Analysis”, Undergraduate Research Project, completed Summer 2005.
60. 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 355/	
CMPT 483	Database Systems
CSIT 430	Databases for Internet Applications (Database class with only programming pre-reqs)
CSIT 440	Data Mining
CSIT 450	Text Management (using XML)
CSIT 491	Cooperative Education (over 15 students per year since 2012)
CSIT 501	Principles of Computer Science
CSIT 555	Database Systems
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 300/585	Introduction to Scientific Databases
CMPT 495/585	Special Topics in Computer Science: Introduction to Bioinformatics
CMPT 495/585	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)

Co-Operative Education Mentorships:

Mentored 72 Co-operative Education students since Fall 2016.

Hybrid and Hy-Flex 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 355	Database Systems
CSIT 500	Computer Science Principles (Spring 2021, Summer 2022)
TRLN 502	Methods of Inclusive Computer Science Teaching (Fall 2021)
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 CURRICULUM AUTHORSHIPS

Curriculum Authored (with additional faculty teams)

1. Graduate Certification in K-12 Computer Science Education, Fall 2024, with Sumi Hagiwara, submitted to the State of NJ, accepted February 2025
2. Graduate Certificate in K-12 Computer Science Education, Fall 2020, with Sumi Hagiwara
3. Ph.D. in Industrial Organization – Big Data Track, Fall 2018
4. Graduate Certificate in Computing Technology, Fall 2018
5. Bachelor of Science in Data Science - Major Program alteration of the Science Informatics Program – Fall 2018.
6. Graduate Certificate in Computer and Information Systems, Fall 2018
7. Master of Science in Computer Science - Information Technology Concentration, Fall 2012
8. 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 500	Computer Science Principles
CSIT 550	Text Management
CSIT 656	Scientific Databases
TRLN 500	Computational Thinking in K-12 Classrooms (with Sumi Hagiwara)
TRLN 502	Methods of Inclusive Computer Science Teaching (Fall 2021)

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].)

MULTIMEDIA DISTANCE LEARNING COURSE MATERIAL

1. Sumi Hagiwara and Katherine G. Herbert, "TRLN 502: Methods of Inclusive Computer Science Teaching", on-line course with Montclair ITDS, Fall 2021.
2. Sumi Hagiwara and Katherine G. Herbert, "TRLN 500: Computational Thinking in K-12 Classrooms", on-line with Montclair ITDS, Summer 2021.
3. Katherine G. Herbert, "CSIT 500: Computer Science Principles", on-line course with Montclair ITDS, Spring 2021
4. Katherine G. Herbert, "CSIT 555: Database Systems", On-line course with Montclair ITDS, Fall 2017.
5. Katherine G. Herbert, "CSIT 110: Computer Concepts for Information Technology", On-line course, Fall 2013. (reclassified to CSIT 104).
6. 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.
7. 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.

COVID Pandemic Teaching Response Content Generation: Additionally, created 160 Panopto videos to "flip" classroom experience for students in CSIT 104, 355, and 500 for Hy-Flex Covid Content Delivery.

PROFESSIONAL SERVICE ACTIVITIES

University-Based Service

University

- Advisory Board, Increasing Access to College Program for students with Disabilities, Susan Baglieri, CEHS, Director
- Member, Montclair State University Disabilities Caucus
- Member, Teacher Education Policy Committee, June 2022-present
- Graduate Council (2017-2021)
- 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)
- Career Services University Office Search Committee (2 Directors, Summer 2014)
- University Parking Review Committee (2004-2005)

College

- College of Science and Mathematics Curriculum Committee (2017-2019)
- 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
- Undergraduate Advisor for Computer Science, Information Technology and Data Sciences, 2004-present
- Graduate Program Committee, May 2012-2014, 2017-2018
- Data Sciences Degree Program committee, Fall 2014-Present
- Space Grant 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/Service to the Profession

Grant Panel Reviews

- National Science Foundation November 2008-2022, 30 panels for three directorates.
  - 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. I have paneled for computer science research, data sciences, panels related to transitioning academic research to industry, interdisciplinary research panels, education panels across eight different programs.
    General information about these service activities can be furnished upon request.
- Department of Defense Education Programs Panel Reviewer, January 2018 – January 2022.
- Sokol Institute for Pharmaceutical Life Sciences, Fellows Proposal, July 2010

Discipline Based Service to Organizations

- Member, New Jersey State Working Group IHE Advisory Committee, May 2022 to present
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- Tenure and Promotion reviewer for Drew University, January 2023
- Curriculum review and advisor to Newark Public School District's Data Science and Information Technology High School – March 2022-present
- Workshop organizer/presenter, AAUW-NJ TeenTech 2016 Program, promoting STEM study/careers for female high school students, Seton Hall University, South Orange NJ, June 3, 2016.
- New Jersey Big Data Alliance, leadership 2017-2019, general member participant until present.
- PSE&G Institute for Sustainability Sciences – Advisory Board from 2015 until 2018
- Tenure and Promotion reviewer for New Jersey Institute of Technology, January 2009

Conference Committee Participation and Conference Session Chair

- Organizer, Montclair State University Curriculum Hack-a-thon, 70 teachers attending, January 2023
- Co-Organizer, Montclair Computer Science for Everyone Everywhere 6-day Summer Workshop, 50 teachers attend, July 2022
- Where does Computer Science Fit into Stem Teacher Education? A Panel Discussion, AAAS/NSF Stimulating Research and Innovation for Preservice Education of STEM Teachers in High-Need Schools conference, 12 June 2017 at Montclair State University. Montclair, NJ
- 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

Book, Journal, and Conference Peer Publication Reviews

- ACM SIGCSE Computer Science Education Conference, 2011-2022
- IEEE ISEC Integrated STEM Education Conference, 2021- 2022
- Knowledge and Information Systems Journal (KAIS 2005-present)
- 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.
- Book Reviewer for Wiley & Sons Publishing –Topic: Java Programming
- International Journal of Data Mining and Bioinformatics (February, March 2007, April 2008)
- The VLDB (Very Large Database) Journal (2004, 2005)
- Information Sciences (Journal Published by Elsevier Publishing), Fall 2004
- The Internet Encyclopedia, 2004
- Information Systems: Special Issue on Bioinformatics and Biological Data Management, June 2003
- The 2008 IEEE World Congress on Computational Intelligence
- 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 IEEE Fifth International Conference on Data Mining (ICDM 2005)
- The 28th Australasian Computer Science Conference 2005 (ACSC 2005)
- 28th Australasian Computer Science Conference-2005, (ACSC2005)
- 2004 SIAM International Conference on Data Mining
- The 14th International Conference for Intelligent Systems for Molecular Biology (ISMB 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 Conference 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

COMMUNITY SERVICE AND COMMUNITY OUTREACH

- Data Consultant, Archdiocese of Newark, Archbishop's Annual Appeal (January 2023-present)
- Kiwanis Club Member, Kiwanis Club of West Essex, August 2022-present.
- CyberPatriot Mentor, Air and Space Force Association, 2019 – present.
- Boy Scouts of America – Science Advisor (Supernova Mentor) Northern New Jersey Council, January 2020-October 2022. Coordinated 50-child science experience through this role.
- Boy Scouts of America, Boy's Cub Scouts Den Leader for St. Aloysius Pack 6, Caldwell, September 2019- October 2022
- Boy Scouts of America, Girl's Cub Scouts Den Leader for St. Aloysius Pack 6, Caldwell, September 2018- June 2022.
- Grover Cleveland Middle School (Caldwell, NJ): "Careers in Science: College Professor", 7th grade presentation, June 10, 2022.
- Terrapin Hatchling Rescue Volunteer, Terrapin Nesting Project, Barnegat, NJ, 2018-2019 (discontinued in Covid Pandemic).
- Founding Member, Caldwell-West Caldwell Parents' Special Needs Advocacy Group, 2017
- Boy Scout and Girl Scout Science Advisory Boards, 2018-2021.

- Mount St. Dominic Academy (Caldwell NJ): Data Sciences discussion for AP CS Principles class – 2021-present.
- 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 Weston's 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 as part of the MSU Westons program, Summer 2013.
- Mount St. Dominic Academy (Caldwell NJ): Presented "Computing and Your Career: What Computing Can Do For You?", December 16, 2013.
- Holy Family Academy (Bayonne NJ): Presented "What is my Career?". March 15, 2009.

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 University – April 2009).

REFERENCES

References can be provided upon request