

# Aditi Singh, Ph.D.

Assistant Lecturer, Cleveland State University

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## Highlights

- \* Ph.D., Computer Science, Kent State University, August 2023.
- \* M.S., Computer Science, Kent State University, December 2017.
- \* 29 publications (24 published, Five in print); Four in progress, one Best Presenter Award; and one Finalist for Best Paper Award. *Citation* = 115, [Google Scholar Profile](#)
- \* 57 reviewing work; Program Committee Member {AIET 2024, AIED 2024, EDM 2024 and ICR 2024} and reviewer for multiple International Conferences and Journals.
- \* Over nine years of academic teaching experience.
- \* Active Member of IEEE, ACM, ACM-W, and AnitaB.org.
- \* Awarded the Gold Medal (summa cum laude) for Bachelor of Engineering in Computer Science, India, 2013.

## Education

- 2018 – 2023    **Kent State University** – Kent, OH  
Ph.D., Computer Science.  
*Dissertation Topic:* A Synchronized Colored Petri Net Modeling for Automated Identification and Learning of Conversational Gestures. *Advisor:* Professor Arvind Bansal.
- 2015 – 2017    **Kent State University** – Kent, OH  
Master in Science, Computer Science.  
*Thesis Topic:* Automated Declarative Gesture Generation for Non-Emotional Human Humanoid Conversation. *Advisor:* Professor Arvind Bansal.
- 2009 – 2013    **Sathyabama University** – Chennai, India  
Bachelor of Engineering, Computer Science, [*Gold Medal (summa cum laude)*]

## Honors and Scholarships

- 2024    AnitaB.org Advancing Inclusion Scholarship Award.
- 2023    Best Presenter Award, IEEE CCWC 2025, IEEE CCWC 2024, IEEE CCWC 2023.
- Spring 2023    Honored with Graduate Student Senate (GSS) Domestic Travel Award, Kent State University.
- 2022    Hopper for Grace Hopper Celebration of Women in Computing at AnitaB.org.
- 2021    Honored with Volunteer Award at *International Conference on Human Computer Interaction*.
- 2017 - May 2023    Graduate Assistant, Department of Computer Science, Kent State University, Ohio.
- 2018    Finalist for Best Paper Award, International Conference on Computer Applications in Industry and Engineering, USA.
- 2013    Gold Medal (summa cum laude), Department of Computer Science, Sathyabama University, Chennai, India. *Awarded to University Top Rank Holder.*

## International Conferences and Journals Publications

- 2025     Agentic Retrieval-Augmented Generation: A Survey on Agentic RAG, *doi:arxiv/2501.09136*.
- 2025     An Speech-Based Emotional Artificial Intelligence Detection Framework (IEEE CCWC).
- 2025     Movie Gen: SWOT Analysis of Meta's Generative AI Foundation Model for Transforming Media Generation, Advertising, and Entertainment Industries **Best Paper Award** (IEEE CCWC).
- 2025     A Survey of Large Language Model-Based Generative AI for Text-to-SQL: Benchmarks, Applications, Use Cases, and Challenges (IEEE CCWC).
- 2025     Sustainability in Large Language Models: Applications, Economics, and Challenges (IEEE CCWC). **Best Presenter Award**
- 2024     A Comprehensive Survey of Cyber-Crimes: Impacts, Classification and Prevention (IEEE IEMCON).
- 2024     An Emotional Artificial Intelligence Framework for Detecting Criminals (IEEE IEMCON).
- 2024     Architectural Flaw Detection in Civil Engineering Using GPT-4 (IEEE UEMCON).
- 2024     A Systematic Literature Review on SWOT Analysis of Prompt Engineering Techniques, *in-review*.  
Journal
- 2024     A Survey of Emotional Artificial Intelligence and Crimes: Detection, Prediction, Challenges and Future Direction, Tala Talaei Khoei, **Aditi Singh**, Journal of Computational Social Science, 2024. (Accepted).  
Journal
- 2024     Data Reduction in Big Data: A Survey of Methods, Challenges and Future directions, Tala Talaei Khoei, **Aditi Singh**, International Journal of Data Science and Analytics, 2024.  
Journal
- 2024     Digital Diagnostics: The Potential Of Large Language Models In Recognizing Symptoms Of Common Illnesses, Submitted for Review.  
Journal
- 2024     Enhancing AI Systems with Agentic Workflows Patterns in Large Language Model, **Aditi Singh**, Abul Ehtesham, Saket Kumar, Tala Talaei Khoei, 2024 IEEE World AI IoT Congress (AIIoT), Seattle, WA, USA, 2024, pp. 527-532
- 2024     Encouraging Responsible Use of Generative AI in Education: A Reward-Based Learning Approach.(Accepted, AIET)
- 2024     Large Language Model-Driven Immersive Agent, **Aditi Singh**, Saket Kumar, Abul Ehtesham, Tala Talaei Khoei, Deepshikha Bhati, 2024 IEEE AIIoT, Seattle, USA, pp. 619-624.
- 2024     Exploring Fine-Grained Feature Analysis for Bird Species Classification using Layer-wise Relevance Propagation, Kyle Arquilla, Ishan Dilipbhai Gajera, Melanie Darling, Deepshikha Bhati, **Aditi Singh**, Angela Guercio, 2024 IEEE World AI IoT Congress (AIIoT), Seattle, WA, USA, 2024, pp. 625-631.
- 2024     Design of a Novice-Friendly Drone Control System, Jinsai Cheng, Saifuddin Mahmud, Misbahuddin Mohammed, **Aditi Singh**, Jong-Hoon Kim, 2024 IEEE 14th Annual Computing and Communication Workshop and Conference (CCWC), Las Vegas, USA, pp. 0184-0190.
- 2024     Revolutionizing Mental Health Care through LangChain: A Journey with a Large Language Model, **Aditi Singh**, Abul Ehtesham, Saifuddin Mahmud, Jong-Hoon Kim, 2024 IEEE CCWC, Las Vegas, NV, USA, pp. 0073-0078.

- 2023 RoboRecycle Buddy: Enhancing Early Childhood Green Education and Recycling Habits through Playful Interaction with a Social Robot, Saifuddin Mahmud, Zina Kamel, **Aditi Singh**, Jong-Hoon Kim, In: Choi, B.J., Singh, D., Tiwary, U.S., Chung, WY. (eds) *Intelligent Human Computer Interaction. IHCI 2023. LNCS*, vol 14531. Springer, Cham.
- 2023 Exploring Language Models: A Comprehensive Survey and Analysis, **Aditi Singh**, 2023 International Conference on Research Methodologies in Knowledge Management, Artificial Intelligence and Telecommunication Engineering, Chennai, India, 2023, pp. 1-4.
- 2023 Transdisciplinary AI Education: The Confluence of Curricular and Community Needs in the Instruction of Artificial Intelligence, Roozbeh Aliabadi, **Aditi Singh** and Eryka Wilson. In: Schlippe, T., Cheng, E.C.K., Wang, T. (eds) *Artificial Intelligence in Education Technologies: New Development and Innovative Practices. AIET 2023. LNDECT*, vol 190. Springer, Singapore.
- 2023 A Survey of AI Text-to-Image and AI Text-to-Video Generators **Aditi Singh**, , 2023 4th International Conference on Artificial Intelligence, Robotics and Control (AIRC), Cairo, Egypt, 2023, pp. 32-36, doi: 10.1109/AIRC57904.2023.10303174.
- 2023 An Integrated Analysis for Identifying Iconic Gestures in Human-Robot Interactions, **Aditi Singh**, and Arvind Bansal. In: Daimi, K., Alsadoon, A., Coelho, L. (eds) *Cutting Edge Applications of Computational Intelligence Tools and Techniques. Studies in Computational Intelligence*, vol 1118. Springer, Cham, doi: 10.1007/978-3-031-44127-1-3 Systems Conference).
- 2023 A Comparison Study on AI Language Detector. **Aditi Singh**, In 2023 IEEE 13th Annual Computing and Communication Workshop and Conference (CCWC), Las Vegas, NV, USA, 2023, pp. 0489-0493, doi: 10.1109/CCWC57344.2023.10099219, Best Presenter Award.
- 2023 Synchronized Colored Petri Net-based Multimodal Modeling and Real-time Recognition of Conversational Deictic Gestures. **Aditi Singh**, and Arvind Bansal. In: Arai, K. (eds) *Intelligent Computing. SAI 2023. LNNS*, vol 739. Springer, Cham.
- 2022 Automated Real-time Recognition of Non-Emotional Conversational Head-Gestures for Social Robots. **Aditi Singh**, and Arvind Bansal. In: Arai, K. (eds) *Proceedings of the Future Technologies Conference (FTC 2022), Volume 3. FTC 2022. LNNS*, vol 561. Springer, Cham.
- 2021 Synchronous Colored Petri Net based Modeling and Video Analysis of Conversational Head-gestures for Training Social Robots. **Aditi Singh**, Arvind Bansal, and Cheng-Chang Lu. *Proceedings of the Future Technologies Conference (FTC 2021), Volume 2. FTC 2021. LNNS*, vol 359. Springer, Cham. doi: 10.1007/978-3-030-89880-9-36.
- 2021 Towards Synchronous Model of Non-Emotional Conversational Gesture Generation in Humanoids. **Aditi Singh**, and Arvind Bansal. *Computing Conference, London, UK, July 16-18, 2021, LNNS*, K. Arai et. el. (Editor), Vol. 283(1), 2021, Springer, Cham, Switzerland, pp. 737-756.
- 2019 Declarative Modeling and Implementation of Robotic Head based Gestures for Human-Robot Interaction. **Aditi Singh**, and Arvind Bansal. *International Journal of Computers and Their Application*, Vol. 26, No. 2, March 2019, pp. 49-66, ISSN 1076-5204.
- 2018 Automated Declarative Modeling for Gesture Generation during Human-Humanoid Conversation. **Aditi Singh**, and Arvind Bansal. *Proceeding of 31st International Conference on Computer Applications in Industry and Engineering*, New Orleans, Louisiana, USA, 2018.

## Grants for Educational Activities

May 24, 2024      Modification of the Bachelor of Science Computer Science Curriculum, From Center for Inclusive Computing, Northeastern University, May 24, 2024 – June 30, 2026.

## Book

- 2023      AI Education for the Next Generation: Nurturing K-12 Students: Effective Methods for Teaching Large Language Models (LLMs) to Young Learners. Authors: Aditya Deewan, Shanshan Jin, Rooz Aliabadi, Contributors: **Aditi Singh**, Eryka Wilson, Jordan Mroziak, Zeyad, Almoaigel [Kindle Edition](#).
- 2023      An Integrated Model for Automated Identification and Learning of Conversational Gestures in Human-Robot Interaction, **Aditi Singh**, Arvind Bansal, In: Daimi, K., Alsadoon, A., Coelho, L. (eds) Cutting Edge Applications of Computational Intelligence Tools and Techniques. Studies in Computational Intelligence, vol 1118. Springer, Cham.

## Professional Experience

- August 21, 2023  
- Present      **Assistant College Lecturer**, Cleveland State University.
- Instructor for the graduate courses *Comparative Programming Language, Database System and Processing, Introduction to Algorithms* and *Analysis of Algorithms*.
  - Managed office hours (four hours per week) to ensure accessible academic assistance - guidance for students and facilitated end-of-semester feedback sessions to assess teaching effectiveness and identify improvement areas.
  - Actively participated in faculty and departmental meetings and workshops to enhance teaching skills and domain knowledge.
- August 20, 2017  
- August 8 2023      **Graduate Assistant**, Kent State University.
- Primary Instructor for the graduate course *Practicum Course for Masters in Artificial Intelligence* program undergraduate courses *CS 23022: Discrete Structures For CS* and *CS 33101 Structure of Programming Languages*.
  - Developed Hybrid version - online delivery, Face to face tutorial and labs of *CS 54201 Artificial Intelligence*. Mentor: Dr. Arvind Bansal.

May 31, 2022 - August 26, 2022	<b>Engineering Development Group Intern</b> , MathWorks Inc. – Boston, MA <ul style="list-style-type: none"> <li>• Developed an end-to-end project in the DA Core UI Team on a Model-Based System Engineering product.</li> <li>• Contributed to developing the new feature, metadata management, reducing code complexity, and debugging.</li> </ul>
January 19 2016 - May 31 2017	<b>Part Time Instructor</b> , Kent State University <ul style="list-style-type: none"> <li>• Upgraded the course and Lab for non-computer science undergraduate students Computer Literacy.</li> <li>• Developed a Hybrid version - online delivery, face-to-face tutorials, and labs for the <i>Computer Literacy</i>. Mentor: Dr. Javed Khan and Dr. Arvind Bansal.</li> </ul>
August 29 2013 - July 2015	<b>Programmer Analyst</b> , Cognizant Technology Solutions – Chennai, India <ul style="list-style-type: none"> <li>• Worked with Informatica PowerCenter and its Components, including Source Analyzer, Warehousing Designer, and Mapping Designer for Extraction, Transformation and Loading (ETL) of data.</li> </ul>

## Professional Activities

2024	Technical Program Committee, <i>5th International Conference on Artificial Intelligence in Education Technology</i> .
2024	Program Committee, <i>24th International Conference on Artificial Intelligence in Education</i> .
2024	Program Committee, <i>17th International Conference on Educational Data Mining</i> .
2024	Program Committee, <i>International Conference on Innovations In Computing Research</i> .
2023	Session Chair, <i>International Conference on Human Computer Interaction, Korea</i> .
2023	Program Committee, <i>24th International Conference on Artificial Intelligence in Education</i> .
2019 – 2022	Reviewer, <i>MDPI Journals Applied Sciences, Electronics, Robotics and Sensor</i> .
2019	Reviewer, <i>3rd International Conference on Computer Science and Application Engineering</i> .
2022	Reviewer for Artificial Intelligence and Python Programming books, Cambridge Press.
2021	Technical Reviewer for a book on Python Programming, The Pragmatic Bookshelf.
2023	FlashPitch Competition, <b>Second Place</b> , Kent State University.
2023	Ohio Celebration of Women in Computing (OCWiC).
October 2022	<b>Finalist</b> for 3 Minute Thesis, Kent State University.
December 2021	<b>IHCI-2021 Support Team</b> , <i>International Conference on Human Computer Interaction, USA</i> .
2021	<b>Judge</b> , World Artificial Intelligence Competition for Youth (WAICY 2021), USA.
2019	Graduate Professional Academic Development workshop, Kent State University, USA.

## Student Mentoring

- 2024-2025 Graduate Independent Study, Halo (Health tracking AI system ), Cleveland State University.
- 2024-2025 Autoformalization with large language models, Senior Design Project, Cleveland State University.
- 2023-2024 Senior Design Project, Shopper Buddy, Cleveland State University.
- Graduate Independent Study, PsyBot, Cleveland State University.
- Ph.D. and Masters student peer mentoring, Computer Science Graduate Student Association, Department of Computer Science, Kent State University, USA.
- Student Projects in Advanced Artificial Intelligence course, Computer Science Graduate Student Association, Department of Computer Science, Kent State University, USA.

## Professional Memberships

- 2022 – Present AnitaB.org
- 2019 – Present IEEE and ACM-W

## Services and Leadership

- January 2025 *Session Chair*, IEEE CCWC, Vegas, USA.
- July 2024 *Session Chair*, Artificial Intelligence in Education Technology, Barcelona, Spain.
- August 2023 - Present *Faculty Advisor*, Cleveland State University ACM-Women Student Chapter.
- November 2023 *Session Chair*, International Conference on Human-Computer Interaction, South Korea.
- Fall 2022 – Spring 2023 *Artificial Intelligence Committee Student Representative*, Master in Science Artificial Intelligence Committee, Department of Computer Science, Kent State University, USA.
- 2020 – 2023 *Graduate Studies Committee Student Representative*, Graduate Studies Committee, Department of Computer Science, Kent State University, USA.
- 2019 – 2023 *Founding Chair*, Kent State University ACM-W Student Chapter, Kent State University, USA.
- 2018 – 2023 *President*, Computer Science Graduate Student Association, Kent State University, USA.
- Fall 2020 – Fall 2021 *Graduate Student Advisory Committee for Department of Computer Science*, College of Arts and Sciences, Department of Computer Science, Kent State University, USA.