Paras Sharma

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Education

Ph.D., Computer Science — Aug. 2022 – Present
University of Pittsburgh — *Pittsburgh, PA*
Committee: Erin Walker (Chair), Diane Litman, Adriana Kovashka, Angela E.B. Stewart, Joseph Michaelis (University of Illinois, Chicago)

M.S., Computer Science — Aug. 2019 – May 2021
University of Southern California — *Los Angeles, CA*

B.Tech. (Hons.), Computer Science & Engineering — Jul. 2013 – May 2017
Indian Institute of Technology (Indian School of Mines) — *Dhanbad, India*

Research Interests

Human–Computer Interaction; Artificial Intelligence in Education; Human–AI Collaboration; Multimodal Learner Modeling; Hybrid Dialogue Systems & LLMs; Mixed-Methods Research

Fellowships, Awards & Honors

Orrin E. and Margaret M. Taulbee Graduate Award for Excellence in Computer Science. University of Pittsburgh, 2025.

Best Paper Nominee. 26th International Conference on Artificial Intelligence in Education, 2025.

3rd Place, Alexa Prize TaskBot Challenge 2. Amazon, 2023. $*50,000* (awarded to 9-member team).

Pre-Doctoral Fellowship. School of Computing and Information, University of Pittsburgh, 2022–2023. $*69,342*.

Viterbi Graduate Student Scholarship. University of Southern California, 2019. $*7,500*.

Director's Award for Academic Excellence. Indian Institute of Technology (Indian School of Mines), Dhanbad, 2015.

Conference Travel Support

CS Travel Award, University of Pittsburgh, 2026, 2025, 2024. $*1,800* total.

Artificial Intelligence in Education (AIED 2025), Palermo, Italy, 2025. $*1,350*.

Educational Data Mining (EDM 2024), Atlanta, GA, 2024. $*2,600*.

Artificial Intelligence in Education (AIED 2024), Recife, Brazil, 2024. $*1,200*.

Publications

Peer-Reviewed Conference Papers

[P.9] **Sharma, P.**, Sha, Y., Shufor Bih Epse Fofang, J., Yan, B., Turner, J. A., Balay, N., Asare, H. O., Stewart, A. E. B., & Walker, E. (2026). Hybrid LLM-Embedded Dialogue Agents for Learner Reflection: Designing Responsive and Theory-Driven Interactions. In *Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems (CHI '26)*, Barcelona, Spain. ACM. DOI.

[P.8] Stewart, A. E. B., **Sharma, P.**, Li, C., Deng, Y., Madein, O., Sha, Y., Shufor Bih Epse Fofang, J., Kundrak, C., & Walker, E. (2026). Design Tensions for Generative AI in Education for Early to Mid-adolescent Youth: An Exploration of Autonomy, Critical Reflection, and Psychological Safety. In Blanchard, E. G., Chen, G., Chi, M., & Isotani, S. (eds.), *Artificial Intelligence in Education (AIED 2026)*, Lecture Notes in Computer Science, vol. 16586. Springer. DOI.

[P.7] **Sharma, P.**, Fritsch, D., Asano, Y., King-Shepard, Q., Langley, T., Maidment, T., Litman, D., Nokes-Malach, T., Kovashka, A., Lobczowski, N., & Walker, E. (2025). Beyond Static Measures: Temporal Analysis of Lexical Alignment in Human-Human Learning With a Teachable Robot. In Cristea, A. I., Walker, E., Lu, Y., Santos, O. C., & Isotani, S. (eds.), *Artificial Intelligence in Education (AIED 2025)*, Lecture Notes in Computer Science, vol. 15880. Springer. DOI.

[P.6] Asano, Y., Litman, D., **Sharma, P.**, Fritsch, D., King-Shepard, Q., Nokes-Malach, T., Kovashka, A., & Walker, E. (2025). Multi-party Lexical Alignment in Collaborative Learning with a Teachable Robot. In *Artificial Intelligence in Education (AIED 2025)*, pp. 123–131. Springer Nature Switzerland.

[P.5] Stewart, A. E. B., Solyst, J., Bao, X., **Sharma, P.**, Buddemeyer, A., Nkrumah, T., Ogan, A., & Walker, E. (2025). Who's Got the Power? Data Feminism as a Lens for Designing AIED Engagement Systems. In *Artificial Intelligence in Education (AIED 2025)*, pp. 233–247. Springer Nature Switzerland.

[P.4] Asano, Y., Hassan, S., **Sharma, P.**, Sicilia, A. B., Atwell, K., Litman, D., & Alikhani, M. (2025). Contextual ASR Error Handling with LLMs Augmentation for Goal-Oriented Conversational AI. In *Proceedings of the 31st International Conference on Computational Linguistics (COLING 2025): Industry Track*, pp. 374–386, Abu Dhabi, UAE. ACL. ACL Anthology.

[P.3] **Sharma, P.**, Bella, V., Stewart, A. E. B., & Walker, E. (2024). Multimodal Sensing of Goals and Activities During Interactions with a Co-created Robot. In *Technology Enhanced Learning for Inclusive and Equitable Quality Education (EC-TEL 2024)*, Lecture Notes in Computer Science, vol. 15160. Springer. DOI.

[P.2] **Sharma, P.**, Stewart, A. E. B., Li, Q., Ravichander, K., & Walker, E. (2024). Building Learner Activity Models From Log Data Using Sequence Mapping and Hidden Markov Models. In *Proceedings of the 17th International Conference on Educational Data Mining (EDM 2024)*, pp. 584–593. DOI.

[P.1] **Sharma, P.**, & Li, Q. (2024). Designing Simulated Students to Emulate Learner Activity Data in an Open-Ended Learning Environment. In *Proceedings of the 17th International Conference on Educational Data Mining (EDM 2024)*, pp. 986–989. DOI.

Manuscripts Under Review

[R.1] **Sharma, P.**, Adewale, R., Sha, Y., Madein, O., Kihiko, A., Balay, N., Ogan, A., Stewart, A.E.B., & Walker, E. "That Makes Me Feel Like a Helpful Robot": Designing Hybrid Multimodal Dialogue Agents for Co-Creative Reflection.

[R.2] Sha, Y., Deng, Y., **Sharma, P.**, Nwogu, J., Shufor Bih Epse Fofang, J., Walker, E., Kundrak, C., & Stewart, A.E.B. Techno-Social Change Agency as Structural Reconfiguration: A Multidimensional Analysis of Development in a Culturally Responsive Computing Learning Environment.

Other Publications

[O.1] Sicilia, A., Asano, Y., Atwell, K., Cheng, Q., Gupta, D., Hassan, S., Inan, M., Nwogu, J., **Sharma, P.**, & Alikhani, M. (2023). ISABEL: An Inclusive and Collaborative Task-Oriented Dialogue System. In *Alexa Prize TaskBot Challenge 2 Proceedings*. Proceedings.

Research Experience

Graduate Student Researcher, Learning Research & Development Center Aug. 2022 – Present
University of Pittsburgh *Pittsburgh, PA*

- Design theory-informed, LLM-embedded dialogue agents to foster and investigate learner reflection in open-ended learning environments.
- Develop computational pipelines using multimodal learning analytics, sequence mapping, and machine learning to model cognitive and metacognitive processes such as knowledge construction, lexical alignment, and self-regulated learning (SRL) from log, dialogue, and sensor data.
- Led learner-centered qualitative research engaging youth through focus groups, early prototyping, and formative design sessions, combined with rigorous qualitative transcript coding to inform system design.

Research Intern, Institute for Creative Technologies Mar. 2021 – Aug. 2021
University of Southern California *Los Angeles, CA*

- Research on transformer-based methods for question answering in a virtual mentor.

Graduate Research Assistant, Social Media Analytics Lab Feb. 2021 – May 2021
Keck School of Medicine, University of Southern California *Los Angeles, CA*

- Developed methods for collecting and analyzing tobacco-product advertising data from social media platforms.

Graduate Research Assistant, Viterbi iPodia Feb. 2020 – Dec. 2020
University of Southern California *Los Angeles, CA*

- Research on clustering algorithms to increase cultural and intellectual diversity among cohorts and analysis of resulting student interactions.

Teaching Experience

Teaching Fellow (Instructor of Record) Aug. 2024 – Dec. 2024
School of Computing & Information, University of Pittsburgh *Pittsburgh, PA*

- Primary instructor for CS 0011: *Introduction to Computing for Scientists* (33 undergraduate students); independently designed and delivered all lectures, course materials, programming projects, and exams.

Mentorship Experience

Graduate Research Mentoring

Qichang Li Jan. 2024 – Apr. 2024
M.S. Computer Science, University of Pittsburgh
Project: Dialogue-agent development using knowledge distillation from a large language model for open-ended robot-building context. **(Co-author on [P.1, P.2])**

Undergraduate Research Mentoring

Daniel Fritsch Sep. 2024 – Present
B.S. Computer Science, University of Pittsburgh
Project: Lexical alignment trajectories, knowledge construction, and gestural alignment in teachable human–human–robot interactions. **(Co-author on [P.6, P.7])**

Astalaxmi Dhanaseelan Jan. 2026 – Present
B.S. Computer Science, University of Pittsburgh
Project: Embedding controllable personality in hybrid LLM-embedded dialogue systems.

Sofija Bulatovic Jan. 2026 – Present
B.S. Information Science, University of Pittsburgh
Project: Dialogue design for hybrid LLM-embedded dialogue systems.

Wunmi Salami Jan. 2026 – Present
B.S. Computer Engineering, University of Pittsburgh
Project: Designing custom hardware components for supporting dialogue through external speaker and microphone sensors in social programmable robots.

Elise Brumley Jan. 2026 – Apr. 2026
B.S. Arts & Sciences, University of Pittsburgh
Project: Hybrid LLM system to extend the strategy recognition capabilities of an AIML-based teachable robot.

Michael Puthumana Sep. 2024 – Apr. 2026
B.S. Computer Science, University of Pittsburgh
Project: Hardware modifications supporting external speaker and microphone sensors in social programmable robotic kits.

Krit Ravichander Jan. 2024 – Aug. 2025
B.S. Computer Science and Psychology, University of Pittsburgh
Project: Structure and surface gestures for the NAO robot. **(Co-author on [P.2])**

Brayden Yan Jan. 2025 – Aug. 2025
B.S. Computer Science, University of Pittsburgh
Project: LLM-based dialogue systems to promote reflection in interactions between learners and their robot designs. **(Co-author on [P.9])**

Travis Mindel Jan. 2025 – Apr. 2025
B.S. Information Science and Psychology, University of Pittsburgh
Project: MediaPipe-based automated gesture replication in a NAO robot.

Jude Gilligan Jan. 2025 – Apr. 2025
B.S. Computer Science, University of Pittsburgh
Project: Real-time lexical alignment in the teachable robot interface.

Siyena Gezahegn Sep. 2024 – Apr. 2025
B.S. Computer Science, University of Pittsburgh
Project: Hardware modifications supporting external speaker and microphone sensors in social programmable robotic kits.

Zeana El Hajomar Sep. 2024 – Jan. 2025
B.S. Computer Science, University of Pittsburgh
Project: Interface and UX improvements for the teachable robot.

Audrey Flood May 2024 – Jul. 2024
FACET Lab Summer Intern, University of Pittsburgh
Project: UI/UX design for the frontend interface of the social programmable robots project.

Raquel Buege Jan. 2024 – Apr. 2024
B.S. Computer Science, University of Pittsburgh
Project: Frontend implementation of the social programmable robots interface.

Veronica Bella Jan. 2023 – May 2024
B.S. Electrical Engineering, University of Pittsburgh
Project: Custom hardware extensions to the Hummingbird robotics kit for sensing hardware addition/removal. **(Co-author on [P.3])**

Industry & Applied Experience

Machine Learning Intern, Applied Agentic Research May 2026 – Aug. 2026
Meta *Menlo Park, CA*
Research internship focused on user simulation and multi-turn benchmarking of large language models.

Software Development Engineer, EC2 Jun. 2021 – Jul. 2022
Amazon Web Services *Seattle, WA*
Software engineering for AWS Launch Wizard, including workload onboarding, service monitoring, and resource tagging.

Software Development Engineer Intern, EC2 May 2020 – Aug. 2020
Amazon Web Services *Seattle, WA*
Developed cloud infrastructure features for dedicated-host tenancy and Host Resource Group integration.

Senior Software Engineer, Intelligence & IoT Division Jun. 2017 – Jul. 2019
Samsung R&D Institute *Bangalore, India*
Developed reinforcement-learning and context-engine components for a personalized social robot and cloud-based IoT systems.

Software Engineer Intern, Intelligence & IoT Division May 2016 – Jul. 2016
Samsung R&D Institute *Bangalore, India*
Developed anomaly-sensing, recommendation, and neural-network methods for IoT device data.

Professional Service

Technical Program Chair Assistant, ACM CHI Conference on Human Factors in Computing Systems 2027.

Conference Reviewer: International Conference on Artificial Intelligence in Education (AIED 2026); International Conference of Computer-Supported Collaborative Learning (CSCL 2026); International Conference of the Learning Sciences (ICLS 2026).

University Service

President, Computer Science Graduate Student Organization, University of Pittsburgh, Sep. 2024 – Present.

Member, LRDC Executive Committee, University of Pittsburgh, Sep. 2024 – Apr. 2026.

Volunteer Service

Student Volunteer, 26th International Conference on Artificial Intelligence in Education (AIED 2025).

Student Volunteer, 25th International Conference on Artificial Intelligence in Education (AIED 2024).