

Tamal Joyti Roy

Doctoral Student | Measurement, Quantitative Methods & Learning Sciences (MQM-LS)
University of Houston, College of Education
tjroy@cougarnet.uh.edu • +1 713-505-4219 • 1800 El Paseo St, Houston, TX 77054

EDUCATION

Ph.D. in Measurement, Quantitative Methods & Learning Sciences 2023–Present
University of Houston, Houston, TX | Focus: Quantitative Methods
Advisor: Dr. Weihua Fan

Bachelor of Science in Computer Science and Engineering 2016–2020
Northwestern University, Khulna, Bangladesh | Focus: Data Mining
Advisor: Mr. Nasif Alvi

PROFESSIONAL EXPERIENCE

Research Assistant June 2026–August 2026
University of Houston, Tilman J. Fertitta Family College of Medicine, Houston, TX
Mentor: Dr. Ben King

- Prepare and manage quantitative datasets for analysis, including data cleaning, coding, variable construction, and documentation across multiple research projects.
- Conduct statistical analyses to support validation of pilot-phase measures, including reliability testing, dimensionality assessment, and preliminary psychometric evaluation.
- Assist in the development and refinement of measurement tools, including a medical respite care fidelity measure and a medical student experience measure.
- Support validation and measurement development efforts related to housing stabilization, feasibility, and related public health constructs through applied psychometric methods.
- Collaborate with research team members to interpret findings and translate analytic results into actionable recommendations.
- Manage identifiable and analytic datasets in accordance with federal, state, and institutional regulations and policies.
- Contribute to dissemination activities, including drafting methods sections, analytic summaries, abstracts, manuscripts, and reports.

Summer Teaching Assistant June 2026–July 2026
University of Houston, College of Education, Houston, TX
Mentor: Dr. Kelli Drenner

- Supported instruction for two undergraduate courses, Child and Adolescent Health and Health Aspects of Human Sexuality, during Summer Term H 2026.
- Graded and provided feedback on student assignments, quizzes, and discussion submissions across both courses.
- Monitored student progress and participation in Canvas LMS, addressing questions related to course content and deadlines.
- Assisted instructor with course administration, including communication with students and maintenance of grade records.

Teaching Assistant January 2026–May 2026
University of Houston, College of Education, Houston, TX
Mentor: Dr. Ken Ripperger-Suhler

- Grade and evaluate weekly student assignments including chapter writings, quizzes, and literature review submis-

sions.

- Assess group activity work plans and final deliverables for four major group projects across the semester.
- Provide individualized feedback to support student understanding of health behavior theories and evidence-based intervention design.
- Assist with course management in Canvas LMS including tracking deadlines, participation, and academic integrity.
- Collaborate with instructor to ensure alignment with course learning outcomes and departmental standards.

Research Assistant – BOUNCE Project

June 2024–Present

University of Houston, College of Education | NSF AISL Grant (PI: Dr. Norma Olvera)

Mentor: Dr. Norma Olvera

- Manage data operations for multiple health intervention programs using standardized protocols to ensure data integrity.
- Direct data collection and analysis for the Diabetes Prevention Program and Nutrition Ambassador Program.
- Mentor graduate and undergraduate interns on quantitative research methodologies and professional development.
- Contribute to scholarly publications through statistical analysis and manuscript preparation.

Graduate Assistant

July 2025–September 2025

C.T. Bauer College of Business & Tilman J. Fertitta Family College of Medicine, University of Houston

Mentor: Dr. M. Mahbub Hossain

- Conducted systematic review identifying primary factors contributing to first-generation college student academic success in the United States, with 32+ articles screened.
- Investigated the impact of AI, grit, and self-efficacy on health professions education outcomes.
- Analyzed large-scale HINTS 7 data examining wearable health device adoption among adults with chronic illness.
- Authored scholarly commentaries and manuscripts on asset-based approaches in education and health.
- Synthesized complex research findings and performed statistical analyses for multiple concurrent projects.

Instructional Assistant

June 2024–August 2024

University of Houston, C.T. Bauer College of Business, Houston, TX

Mentor: Dr. M. Mahbub Hossain

- Spearheaded data analysis initiatives for a funded research project, delivering key insights supporting project objectives.
- Collaborated on manuscript preparation, synthesizing complex research findings into publication-ready content.
- Performed comprehensive statistical analyses to validate research hypotheses and strengthen manuscript conclusions.

Teaching Assistant

June 2024–August 2024

University of Houston, College of Education, Houston, TX

Mentor: Dr. Toya Conston

- Managed two asynchronous course sections with approximately 50 students each, providing comprehensive academic support.
- Facilitated student learning through regular office hours and individualized support for complex psychological concepts.
- Administered course content via Canvas LMS, ensuring timely updates and seamless resource access.

Research Assistant

August 2023–May 2024

University of Houston, College of Education, Houston, TX

Mentor: Dr. Tiffany J. Davis

- Led data analysis projects using advanced statistical methods to evaluate student success metrics.
- Developed and automated data preprocessing workflows, reducing processing time and ensuring data quality.
- Created data visualizations and analytical reports using Tableau and Power BI.
- Earned certifications in Tableau and Power BI and implemented skills to enhance data analysis capabilities.

Data Scientist

November 2021–June 2023

- Led enterprise-wide implementation of generative AI solutions and data science frameworks.
- Orchestrated SEO analytics strategy and optimization initiatives using data-driven insights.
- Engineered advanced predictive models using PyTorch and scikit-learn for business decision-making.
- Designed and executed sophisticated statistical analyses, translating complex data into stakeholder reports.

PEER-REVIEWED PUBLICATIONS

Journal Articles

1. **Roy, T. J.**, Saha, N., Chavez, S., Liaw, W., & Hossain, M. M. (2026). Grit in undergraduate medical education: A scoping review. *Medical Science Educator*. Advance online publication. <https://doi.org/10.1007/s40670-026-02799-0> (**IF 1.9**)
2. Olvera, N., Matthews-Ewald, M. R., **Roy, T. J.**, Scherer, R., Garcini, L. M., & Arbona, C. (2026). Associations among anxiety, sleep quality, and binge eating in Hispanic and African American/Black early adolescents. *Children*, 13(6), 761. <https://doi.org/10.3390/children13060761> (**IF 2.6**)
3. Saha, N., **Roy, T. J.**, & Hossain, M. M. (2026). Preventing health information disorders (HIDs) in college students: Perspectives on health information hygiene in higher education. *Journal of American College Health*, 1–5. <https://doi.org/10.1080/07448481.2026.2630052> (**IF 3.2**)
4. Huynh, A. L., **Roy, T. J.**, Jackson, K. N., Lee, A. G., Liaw, W., & Hossain, M. M. (2025). Applications of artificial intelligence-based conversational agents in healthcare: A systematic umbrella review. *International Journal of Medical Informatics*, 106204. <https://doi.org/10.1016/j.ijmedinf.2025.106204> (**IF 4.1**)
5. Olvera, N., Scherer, R., **Roy, T. J.**, Chavez Cubas, N. W., Matthews-Ewald, M. R., & Arbona, C. (2025). Visual voices: Hispanic and African American youth perspectives on neighborhood and school health. *Children*, 12(9), 1165. <https://doi.org/10.3390/children12091165> (**IF 2.1**)
6. Olvera, N., Scherer, R., Wu, W., **Roy, T. J.**, Matthews-Ewald, M. R., Fan, W., & Arbona, C. (2025). The role of doctor visits, body image discrepancy, and perceived health in predicting medical weight problem diagnosis. *Healthcare*, 13(17), 2135. <https://doi.org/10.3390/healthcare13172135> (**IF 2.7**)
7. Olvera, N., **Roy, T. J.**, Scherer, R., Matthews-Ewald, M., Fan, W., & Arbona, C. (2025). Emotional eating in Hispanic youth: The role of anxiety and sleep quality. *Nutrients*, 17(9), 1588. <https://doi.org/10.3390/nu17091588> (**IF 5.0**)
8. Hossain, M. M., Saha, N., Rodela, T. T., Tasnim, S., Nuzhath, T., **Roy, T. J.**, Burdine, J. N., Ahmed, H. U., McKyer, E. L. J., Basu, B. K., & Ma, P. (2022). Global research on syndemics: A meta-knowledge analysis (2001–2020). *F1000Research*, 11(253). <https://doi.org/10.12688/f1000research.74190.2> (**IF 3.2**)

Manuscripts Under Review / In Revision

1. Factors influencing academic success of first-generation college students in the United States: A systematic review.
2. Understanding medical weight problem diagnosis in Hispanic women and men: The role of healthcare utilization, body image, and perceived health status.
3. Self-efficacy in digital nursing education: A scoping review

Manuscripts Under Preparation

1. The role of self-efficacy and regulation difficulties in predicting academic procrastination.

2. The role of anxiety, body discrepancy, and sleep on body mass index among Latino youth.
3. The impact of teacher and student beliefs on math and science engagement.
4. Linking growth mindset to academic engagement through college belongingness and self-efficacy.
5. Academic Belonging in the Age of Artificial Intelligence: A Scoping Review
6. Social Isolation, eHealth Engagement, and Psychological Distress Among U.S. Adults: A Serial Mediation Analysis of Health Self-Efficacy Using HINTS 7
7. Predicting Online Health Information Seeking Among U.S. Adults: A Machine Learning Classification Analysis of HINTS 7 With Implications for Digital Health Equity

BOOK CHAPTERS

1. Shelton, L., Nguyen, K., Joseph, T., **Roy, T. J.**, Roy, P., Alarcón, J., & Olvera, N. (in press). How is our community healthy? Program design and lessons learned while training college students to facilitate photovoice projects with children. In *The Palgrave Handbook on Participatory Action Research with Children*. Palgrave Macmillan.
2. Roy, D., Mahmood, M. A., & **Roy, T. J.**, (2023). An efficient approach to assess the soil quality of Sundarbans utilizing hierarchical clustering. In *Applied Intelligence for Industry 4.0* (pp. 79–89). Chapman and Hall/CRC. <https://doi.org/10.1201/9781003256083>
3. **Roy, T. J.**, & Mahmood, M. A. (2023). Global warming and Bangladesh: A machine learning approach to analyze the warming rate utilizing neural network. In *Lecture Notes in Electrical Engineering* (pp. 19–30). Springer Nature Singapore.

CONFERENCE PRESENTATIONS

1. **Roy, T. J.**, Saha, N., Choi, C., Roy, P., & Master, A. (2026, August 6–8). Fostering sense of belonging in science education: The role of self-concept, interest, and students' perceptions of teachers' beliefs [Poster]. APA 2026 Annual Convention, Washington, D.C.
2. Saha, N., Roy, P., **Roy, T. J.**, Chavez Cubas, N. W., Scherer, R., & Olvera, N. (2026, April). A multilevel analysis of socioeconomic status disparities: The role of school context in shaping student outcomes [Roundtable]. AERA Annual Meeting, Los Angeles, CA.
3. **Roy, T. J.**, Das, J., & Hossain, M. M. (2025, November 2–5). Factors associated with online medical record use among US adults with hypertension [Presentation]. APHA Annual Meeting, Washington, DC.
4. **Roy, T. J.**, Das, J., & Hossain, M. M. (2025, November 2–5). Predictors of health and wellness apps use among smartphone users in the US [Presentation]. APHA Annual Meeting, Washington, DC.
5. **Roy, T. J.**, Das, J., & Hossain, M. M. (2025, November 2–5). Prevalence and correlates of wearable health technology use among people with diabetes in the US [Presentation]. APHA Annual Meeting, Washington, DC.
6. Das, J., **Roy, T. J.**, & Hossain, M. M. (2025, November 2–5). Association between online health information-seeking behavior and perceived health-related misinformation among older adults in the US [Presentation]. APHA Annual Meeting, Washington, DC.
7. Saha, N., Guzman, Y. G., **Roy, T. J.**, Chavez Cubas, N. W., Daniel, P., Nguyen, K., & Olvera, N. (2025, November 2–5). Association between online health information-seeking behavior and perceived health-related misinformation among older adults in the US [Presentation]. APHA Annual Meeting, Washington, DC.
8. **Roy, T. J.**, Fan, W., Olvera, N., & Arbona, C. (2025, August). The role of self-efficacy and regulation difficulties in predicting academic procrastination [Poster]. APA Annual Convention, Denver, CO.

9. **Roy, T. J.**, Saha, N., Nguyen, N., Scherer, R., Fan, W., Arbona, C., & Olvera, N. (2025, August). The role of anxiety, body discrepancy, and sleep on body mass index among Latino youth [Poster]. APA Annual Convention, Denver, CO.
10. **Roy, T. J.**, Roy, P., Scherer, R., Fan, W., Arbona, C., & Olvera, N. (2025, August). Emotional eating in Hispanic adolescents: Role of anxiety and sleep quality [Poster]. APA Annual Convention, Denver, CO.
11. Huynh, A. L., **Roy, T. J.**, Jackson, K. N., Lee, A., & Hossain, M. M. (2024). Effectiveness of AI-based chatbots in healthcare: An umbrella review. *International Conference on Information Systems (ICIS)*, TREOS.
12. Ashiq Mahmood, M., Roy, **Roy, T. J.**, Ashiqul Amin, M., Roy, D., Mohanta, A., Fayezy Dipty, F., & Mitra, S. (2023). A hybrid approach to find COVID-19 related lung infection utilizing 2-bit image processing. In *Lecture Notes in Networks and Systems* (pp. 119–127). Springer Nature Singapore.
13. **Roy, T. J.**, Mahmood, M. A., & Mohanta, A. (2022). An efficient approach to validate COVID-19 related vaccine myths utilizing LDA algorithm. *2nd International Conference on Computing Advancements*, 53–58.
14. **Roy, T. J.**, Mahmood, M. A., Mohanta, A., Roy, D., Jyoti, J. T., & Ghosh, P. K. (2022). A machine learning approach to analyze the performance of Bangladesh cricket in T20. *2022 International Conference on Innovations in Science, Engineering and Technology (ICISSET)*, 129–134.
15. Roy, D., **Roy, T. J.**, Mahmud, I., & Alvi, N. (2022). An efficient approach to predict fear of human's mind during COVID-19 outbreaks utilizing data mining technique. In *Advances in Intelligent Systems and Computing* (pp. 41–51). Springer Singapore.
16. **Roy, T. J.**, Mahmood, M. A., & Roy, D. (2021). A machine learning model to predict earthquake utilizing neural network. *2021 International Conference on Computer, Communication, Chemical, Materials and Electronic Engineering (IC4ME2)*, 1–4.
17. **Roy, T. J.**, Mahmood, M. A., & Roy, D. (2021). An efficient approach to identify key factors of failure of Bangladesh cricket team in test cricket utilizing hypothesis testing and clustering. *2021 5th International Conference on Electrical Information and Communication Technology (EICT)*, 1–6.
18. **Roy, T. J.**, Mahmood, M. A., Mohanta, A., & Roy, D. (2021). An analytical approach to predict the COVID-19 death rate in Bangladesh utilizing multiple regression and SEIR model. *2021 IEEE International Conference on Robotics, Automation, Artificial-Intelligence and Internet-of-Things (RAAICON)*, 42–45.
19. Roy, D., Mahmood, M. A., **Roy, T. J.**, & Mohanta, A. (2021). A two-step clustering approach to measure soil quality of Sundarban based on organic carbon and bulk density. *2021 IEEE RAAICON*, 85–88.

RESEARCH PROJECTS

Motivation, Grit, and Academic Engagement

September 2024

University of Houston, PHLS | IRB #STUDY00004949 (Approved Sept 20, 2024) | Role: Co-PI

- Designed and submitted IRB-approved research study exploring relationships among motivation, grit, and academic engagement among college students.

Systematic Review: First-Generation College Student Success

June 2024

University of Houston

- Led systematic review screening and analyzing 32+ peer-reviewed articles on first-generation college student success factors in the United States.
- Developed systematic search protocols across multiple academic databases.

CoderKids: Impact of Coding Programs on Children's Learning

April 2024

University of Houston, PHLS | IRB #STUDY00004640 (Approved April 17, 2024) | Role: Graduate Student Researcher

- Developed and submitted IRB-approved study investigating the impact of coding programs on children’s engagement and learning outcomes.

Image to Text Classification: OCR Model Implementation

June 2022

- Engineered an OCR model leveraging TensorFlow and OpenCV for robust text detection and extraction.
- Implemented an end-to-end text detection and conversion pipeline transforming image-based text into digital format.
- Designed a categorization system for processing and organizing extracted text content.

Time Series Analysis – SARIMAX Forecasting

April 2022

- Developed and implemented a SARIMAX model for trend prediction and future value forecasting.
- Performed comprehensive time series decomposition through removal of trend, seasonal, and cyclical components.
- Built an end-to-end forecasting pipeline using Python and scikit-learn.

Emotion Classification from Open Source Data

January 2022

- Designed and implemented an emotion detection system using machine learning to analyze user sentiment across multiple data sources.
- Developed and optimized classification algorithms for emotion categorization and pattern recognition.
- Built a comprehensive data processing pipeline for sentiment analysis.

Sentiment Analysis from Large-Scale Public Datasets

January 2022

- Engineered sentiment analysis models using advanced machine learning to extract insights from large-scale public datasets.
- Conducted comprehensive data preprocessing, feature engineering, and model optimization.
- Developed analytical reports documenting methodology, findings, and key insights.

Data Mining for COVID-19 and Human Fear Correlation

December 2019

- Led research study analyzing COVID-19 fear patterns across diverse demographic groups (N = 553 participants).
- Implemented and compared ten machine learning algorithms; achieved optimal performance with LogitBoost (70.34% accuracy).
- Developed research visualizations using Weka, Google Drawing, and Adobe Illustrator; authored reports in LaTeX.

AWARDS & SCHOLARSHIPS

- Basheer A. Hashmi Scholarship, 2026–2027 | \$5,000.
- Graduate Student Poster Award Finalist, APA Division 15, Top 10 of 619 submissions, 2025.
- Joshua Weinstein Memorial Endowed Scholarship, University of Houston, 2025–2026 | \$2,000.
- PHLS Travel Fellowship, University of Houston, 2025–2026 | \$500.
- TA & RA Waiver (54.212 PH), University of Houston, 2025–2026 | \$9,180.
- TA & RA Waiver (54.212 PH), University of Houston, 2024–2025 | \$9,180.
- Graduate Tuition Fellowship, University of Houston, 2024–2025 | \$8,162.
- Competitive SCH WCR (54.213 PH), University of Houston, 2023–2024 | \$6,240.
- TA & RA Waiver (54.212 PH), University of Houston, 2023–2024 | \$4,680.
- Graduate Tuition Fellowship, University of Houston, 2023–2024 | \$9,929.

ACADEMIC SERVICE

Ad Hoc Peer Reviewer

- *Cureus Journal of Medical Science* (2023–Present).
- *JB I Evidence Synthesis* (2025–Present).
- *Frontiers in Psychology – Educational Psychology* (2026–Present).
- *Health Promotion Practice* (2026–Present)

Professional Memberships

- American Educational Research Association (AERA) – Student Member (2023–2024).
- American Public Health Association (APHA) – Student Member (2025–Present).
- American Psychological Association (APA) – Student Member (2025–Present).

TECHNICAL SKILLS

- **Statistical & Quantitative Methods:** Mplus 8.10 (SEM, serial mediation, BCa bootstrapping, WLSMV), HLM (multilevel modeling), SPSS, R (lavaan, jackknife replication weights).
- **Programming & Machine Learning:** Python (scikit-learn, PyTorch, TensorFlow, OpenCV), R, C, C++, Java.
- **Data Visualization:** Tableau, Power BI, Matplotlib, RapidMiner Studio.
- **Tools & Platforms:** Excel, LaTeX, Git, Canvas LMS.

CERTIFICATIONS

- Social-Behavioral-Educational Researchers, CITI Program, 2023–2026.
- AI Productivity Hacks, LinkedIn Learning, 2024.
- Intermediate Python for Non-Programmers, LinkedIn Learning, 2024.
- Introduction to Prompt Engineering for Generative AI, LinkedIn Learning, 2024.

Last updated: June 19, 2026