

Mohammad Rafayet Ali

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[Google Scholar](#) [LinkedIn](#)

EDUCATION

- 2020 Ph.D. in Computer Science
University of Rochester
- 2016 M.S. in Computer Science
University of Rochester
- 2013 B.Sc. in Computer Science and Engineering
Bangladesh University of Engineering and Technology

EMPLOYMENT

- Associate Data Scientist July 2021 – Present
Sysco Corporation
- Postdoctoral Associate August 2020 – July 2021
Rochester HCI lab, University of Rochester
Mentor: Ehsan Hoque
- Microsoft Research Intern. May 2019 – August 2019
Build a convolutional neural network framework to detect Parkinson’s disease from videos.
Mentor: Daniel McDuff and Mary Czerwinski.

PUBLICATIONS

Journal Papers

1. **M Rafayet Ali**, Taylor Myers, Ellen Wagner, Harshil Ratnu, Ray Dorsey, Ehsan Hoque, “Facial expressions can detect Parkinson’s disease: preliminary evidence from videos collected online.” *Nature partner Journal Digital Medicine* 4, 129 (2021). doi:10.1038/s41746-021-00502-8.
2. **M Rafayet Ali**, Taylan Sen, Qianyi Li, Raina Langevin, Taylor Myers, E. Ray Dorsey, Saloni Sharma, and Ehsan Hoque. “Analyzing Head Pose in Remotely Collected Videos of People with Parkinson’s Disease.” *ACM Transactions on Computing for Healthcare* 2, no. 4 (2021): 1-13.
3. **M Rafayet Ali**, Taylan Sen, Benjamin Kane, Shagun Bose, Thomas M. Carroll, Ronald Epstein, Lenhart Schubert, and Ehsan Hoque. “Novel Computational Linguistic Measures, Dialogue System and the Development of SOPHIE: Standardized Online Patient for Healthcare Interaction Education.” *IEEE Transactions on Affective Computing* (2021).

4. Rahman, Wasifur, Sangwu Lee, Md Saiful Islam, Victor Nikhil Antony, Harshil Ratnu, **M Rafayet Ali**, Abdullah Al Mamun et al. "Detecting Parkinson Disease Using a Web-Based Speech Task: Observational Study." *Journal of Medical Internet Research* 23, no. 10 (2021): e26305.
5. **M Rafayet Ali**, Ehsan Hoque, Paul Duberstein, Lenhart Schubert, Seyedeh Zahra Razavi, Benjamin Kane, Caroline Silva, Jennifer S. Daks, Meghan Huang, and Kim Van Orden. "Aging and Engaging: A Pilot Randomized Controlled Trial of an Online Conversational Skills Coach for Older Adults." *The American Journal of Geriatric Psychiatry* (2020).
6. Minh Tran, Taylan Sen, Kurtis Haut, **M Rafayet Ali**, and Mohammad Ehsan Hoque. "Are you really looking at me? A Feature-Extraction Framework for Estimating Interpersonal Eye Gaze from Conventional Video." *IEEE Transactions on Affective Computing* (2020).
7. E. Dorsey, Larsson Omberg, Emma Waddell, Jamie L. Adams, Roy Adams, **M Rafayet Ali**, Katherine Amodeo et al. "Deep Phenotyping of Parkinson's Disease." *Journal of Parkinson's Disease* (2020): 1-19.
8. Raina Langevin, **M Rafayet Ali**, Taylan Sen, Christopher Snyder, Taylor Myers, E. Ray Dorsey, and Mohammed Ehsan Hoque. "The PARK Framework for Automated Analysis of Parkinson's Disease Characteristics." *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 3, no. 2 (2019): 1-22.
9. Samiha Samrose, Ru Zhao, Jeffery White, Vivian Li, Luis Nova, Yichen Lu, **M Rafayet Ali**, and Mohammed Ehsan Hoque. "Coco: Collaboration coach for understanding team dynamics during video conferencing." *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 1, no. 4 (2018): 1-24.
10. Kimberly Van Orden, **M Rafayet Ali**, Kimberly A. Parkhurst, Paul Duberstein, and M. Ehsan Hoque. "Aging & Engaging: The development of an automated tool to teach social engagement skills for older adults." *The American Journal of Geriatric Psychiatry* 25, no. 3 (2017): S140-S141.

Conference Papers

11. **M Rafayet Ali**, Seyedeh Zahra Razavi, Raina Langevin, Abdullah Al Mamun, Benjamin Kane, Reza Rawassizadeh, Lenhart K. Schubert, and Ehsan Hoque. "A Virtual Conversational Agent for Teens with Autism Spectrum Disorder: Experimental Results and Design Lessons." In *Proceedings of the 20th ACM International Conference on Intelligent Virtual Agents*, pp. 1-8. 2020.
12. **M Rafayet Ali**, Javier Hernandez, E. Ray Dorsey, Ehsan Hoque, and Daniel McDuff. "Spatio-Temporal Attention and Magnification for Classification of Parkinson's Disease from Videos Collected via the Internet." In *2020 15th IEEE International Conference on Automatic Face and Gesture Recognition (FG 2020)*, pp. 53-60.

13. **M Rafayet Ali**, Taylan Sen, Viet-Duy Nguyen, M. Ehsan Hoque, Ronald M. Epstein, Reza Rawassizadeh, and Paul R. Duberstein. "What Computers Can Teach Us About Doctor-Patient Communication: Leveraging Gender Differences in Cancer Care." In *2019 8th International Conference on Affective Computing and Intelligent Interaction (,)*, pp. 1-7. IEEE, 2019.
14. **M Rafayet Ali**, Taylan Sen, Dev Crasta, Viet-Duy Nguyen, Ronald Rogge, and Mohammed Ehsan Hoque. "The what, when, and why of facial expressions: An objective analysis of conversational skills in speed-dating videos." In *2018 13th IEEE International Conference on Automatic Face & Gesture Recognition (FG 2018)*, pp. 203-209. IEEE, 2018.
15. **M Rafayet Ali**, Kimberly Van Orden, Kimberly Parkhurst, Shuyang Liu, Viet-Duy Nguyen, Paul Duberstein, and M. Ehsan Hoque. "Aging and engaging: A social conversational skills training program for older adults." In *23rd International Conference on Intelligent User Interfaces*, pp. 55-66. 2018.
16. Taylan Sen, **M Rafayet Ali**, Mohammed Ehsan Hoque, Ronald Epstein, and Paul Duberstein. "Modeling doctor-patient communication with affective text analysis." In *2017 seventh international conference on affective computing and intelligent interaction (ACII)*, pp. 170-177. IEEE, 2017.
17. Razavi, S., L. Schubert, **M Rafayet Ali**, and Mohammed Ehsan Hoque. "Managing casual spoken dialogue using flexible schemas, pattern transduction trees, and gist clauses." In *Annual Conference on Advances in Cognitive Systems (ACS)*. 2017.
18. Van Orden, K., M. E. Hoque, **M Rafayet Ali**, P. R. Duberstein, and Y. Conwell. "Aging & Engaging: an automated program to improve social communication for depressed older adults." *Innovation in Aging* 1, no. suppl_1 (2017): 1253-1253.
19. **M Rafayet Ali**, Facundo Ciancio, Ru Zhao, Iftekhar Naim, and Mohammed Hoque. "ROC Comment: Automated descriptive and subjective captioning of behavioral videos." In *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing*, pp. 928-933. 2016.
20. Razavi, Seyedeh Zahra, **M Rafayet Ali**, Tristram H. Smith, Lenhart K. Schubert, and Mohammed Ehsan Hoque. "The LISSA virtual human and ASD teens: An overview of initial experiments." In *International Conference on Intelligent Virtual Agents*, pp. 460-463. Springer, Cham, 2016.
21. **M Rafayet Ali**, Dev Crasta, Li Jin, Agustin Baretto, Joshua Pachter, Ronald D. Rogge, and Mohammed Ehsan Hoque. "LISSA—Live Interactive Social Skill Assistance." In *2015 International Conference on Affective Computing and Intelligent Interaction (ACII)*, pp. 173-179. IEEE, 2015.

Workshop and Doctoral Consortium

22. **M Rafayet Ali**. “Online virtual standardized patient for communication skills training.” In Proceedings of the *24th International Conference on Intelligent User Interfaces*, pp. 155-156. 2019.
23. S. Zahra Razavi, Lenhart K. Schubert, Benjamin Kane, **M Rafayet Ali**, Kimberly A. Van Orden, and Tianyi Ma. 2019. “Dialogue Design and Management for Multi-Session Casual Conversation with Older Adults”. In Joint Proceedings of the *ACM IUI 2019 Workshops*, Los Angeles, USA, March 20, 2019 , 9 pages.
24. Singhal, Astha, **M Rafayet Ali**, Raiyan Abdul Baten, Chigusa Kurumada, Elizabeth West Marvin, and Mohammed Ehsan Hoque. “Analyzing the impact of gender on the automation of feedback for public speaking.” In 2018 *13th IEEE International Conference on Automatic Face & Gesture Recognition (FG 2018)*, pp. 607-613. IEEE, 2018.
25. **M Rafayet Ali**, and Ehsan Hoque. “Social skills training with virtual assistant and real-time feedback.” In Proceedings of the *2017 ACM International Joint Conference on Pervasive and Ubiquitous Computing*, pp. 325-329. 2017.
26. **M. Rafayet Ali**, “Automated Social Skills Coach with Real-Time Feedback on Nonverbal Cues”, *Automatic Face and Gesture Recognition. (FG 2017)*.
27. **M Rafayet Ali**. “Automated conversation skills assistant.” In 2015 *International Conference on Affective Computing and Intelligent Interaction (ACII)*, pp. 760-765. IEEE, 2015.

PROJECTS

- 2020 **Ageing and Engaging**: Online platform for helping older adults with communication deficits by allowing them to practice conversation with a virtual agent and receive feedback. (using Python, JavaScript, C#, PHP). <https://github.com/mali7/lissa>

The Values and Options In the Cancer Experience (VOICE): Understanding the communication patterns of doctors and advanced cancer patients from audio and speech features using machine learning techniques including clustering, deep learning, SVM, and linear regression. (using Python) <https://github.com/mali7/voice>
- 2019 **PARK** - Parkinson's Analysis with Remotely-accessed Knowledge: A web-based interface to collect the data from Parkinson’s patients to assess the severity of the disease. (using JavaScript, Python). <https://www.machinteraction.com/parkinsons/>
- 2018 **CoCo (Collaboration Coach)**: Online video conferencing tool for enhancing collaborative discussions.

- 2016 **ROC Comment:** An automated interface for generating natural language comments for behavioral videos. The system utilizes a model based on LSTM. (using Java, Python, PHP). www.tinyurl.com/roccomment <https://github.com/mali7/roccomment>
- 2015 **Live Interactive Social Skills Assistant (LISSA):** A web-based system that helps people practice their conversational skills with a human-like virtual agent and receiving real-time feedback on nonverbal behavior (using JavaScript, C#, PHP). <https://github.com/mali7/Speed-dating>
- 2014 **ROC Speak Real Time:** A web-based tool allowing people to practice public speaking with real-time feedback (using JavaScript, Praat, C#, ffmpeg). [demo](#)
- 2012 **Hospital Management System:** A database project for hospital management and information System (using Oracle, ASP.Net, C#.)

TEACHING EXPERIENCE

Graduate Teaching Assistant, Dept. of Computer Science, University of Rochester.

- Courses: Database Systems, Advanced Front-end Web Development.

Lecturer, Ahsanullah University of Science and Technology, Dhaka, Bangladesh.

- Courses: Digital Electronics, Computer Graphics, Software Development.

INVITED TALKS

- Ada Lovelace Celebration: Women in Technology 2020
Workshop on Machine Learning and NLP
Title: Intelligent Conversational Agents in Communication
- NSF Research Traineeship Program 2017(NRT)
Title: Automated Social Skills Training.
- NSF Research Experiences for Undergraduates (REU) Symposium 2017
Title: Virtual Assistants for Automated Social Skills Coaching.

TECHNICAL SKILLS

| | |
|------------------------|--|
| Languages | Python, C, C++, R, C#, Java, JavaScript, PHP, HTML5, CSS. |
| Machine Learning tools | Scikit-learn, Keras, NLTK. |
| API & IDEs | Android, OpenGL, Microsoft Visual Studio, Netbeans, Eclipse. |
| Database | Oracle, MySQL. |

SERVICES

Review

- Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT 2020)
- CHI Conference on Human Factors in Computing Systems (CHI 2019, 2020)
- Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT 2017)
- Automated Face and Gesture Recognition (FG 2017)
- Intelligent User Interface (IUI 2016)
- IEEE Transactions on Affective Computing

Student Volunteer

- Intelligent User Interfaces (IUI 2019, 2018)

MENTORSHIP

- Undergraduate Students
- Qianyi Li*, (Data Science 2020), MS student at Duke University.
 - Raina Langevin*, (Computer Science 2019), Ph.D. Student at U of Washington.
 - VietDuy. Nguyen, (Computer Science 2019), Ph.D. Student at U of Texas Austin.
 - Joshua Pachter, (Computer Science 2018), Software Engineer at Amazon.
- Master's Students
- Li Jin*, (Technical Entrepreneurship 2016), Senior Consultant at EY.
 - Agustin Baretto, (Technical Entrepreneurship 2016), Founder of Neginet.
 - Facundo Ciancio, (Technical Entrepreneurship 2016), Dev Manager at Mercado.

* Underrepresented and minority students

COLLABORATORS

Lenhart K. Schubert, Professor, Computer Science, University of Rochester.

Ronald M. Epstein, Professor of Family Medicine, Psychiatry & Oncology, University of Rochester.

Paul Duberstein, Professor of Medicine and Psychiatry, University of Rochester.

E. Ray Dorsey, Professor of Neurology, University of Rochester.

Ronald D. Rogge, Associate Professor of Psychology, University of Rochester.

Kimberly A. Van Orden, Assistant Professor of Psychiatry, University of Rochester.

REFERENCES

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