

Rahul Islam

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FIELDS OF INTEREST

Affective Computing, Mental Health Sensing, Human-Computer Interaction, Machine Learning

EDUCATION

Stevens Institute of Technology | HOBOKEN, USA

PhD | Systems Engineering | 2020 - Present | Advisor: Sang-Won Bae

Indian Institute of Information Technology | GUWAHATI, INDIA

Bachelor | Computer Science | 2017

EXPERIENCE

Stevens Institute of Technology | GRADUATE RESEARCH ASSISTANT

Jan 2020 - Present | Hoboken, USA

- Led research on AI-driven mental health support systems, developing the 'PupilSense' and 'FacePsy' systems, resulting in a 81% AUROC in depression detection using facial and pupil-based cues.
- Published 10+ papers in top-tier conferences like IEEE BSN, MobileHCI, JMIR, ABC, and CESUN, showcasing advancements in affective mobile sensing.
- Collaborated with interdisciplinary teams to develop and deploy machine learning models in real-world settings, enhancing digital biomarkers for mental illness and substance use disorder.

Egnify | SENIOR SOFTWARE ARCHITECT

Jul 2017 - Aug 2019 | Hyderabad, India

- Spearheaded the development of 5 scalable products for student performance analytics to Digitize. Rate. Forecast. Optimize. Personalize.
- Managed a team of 5 engineers, optimizing software development and machine learning models for predictive analytics, contributing to a 20% increase in student success.

ParallelDots | DATA SCIENTIST

Apr 2017 - Jun 2017 | Gurugram, India

Working with medical diagnostic team for developing machine learning based medical diagnostic systems.

Brahmaputra Innovative Solutions | SOFTWARE ENGINEER INTERNSHIP

May 2015 - Jan 2016 | Guwahati, India

Worked on document management system

PUBLICATION

Journal/Conference/Poster

1. **Rahul Islam**, Tongze Zhang, Sang Won Bae. "MoodCam: Mood Prediction Through Smartphone-Based Facial Affect Analysis in Real-World Settings" IEEE International Conference on Ubiquitous Intelligence and Computing (IEEE UIC 2024)
2. **Rahul Islam**, Vasco Xu, Karan Ahuja. "MotionTrace: IMU-based Field of View Prediction for Smartphone AR Interactions" IEEE International Conference on Wearable and Implantable Body Sensor Networks (IEEE-EMBS BSN 2024)
3. **Rahul Islam**, Tongze Zhang, Priyanshu Singh Bisen, Sang Won Bae. "MoodPupilar: Predicting Mood Through Smartphone Detected Pupillary Responses in Naturalistic Settings" IEEE International Conference on Wearable and Implantable Body Sensor Networks (IEEE-EMBS BSN 2024)
4. **Rahul Islam**, Sang Won Bae. "FacePsy: An Open-Source Affective Mobile Sensing System – Analyzing Facial Behavior and Head Gesture for Depression Detection in Naturalistic Settings" In the Proceedings of the ACM on Human-Computer Interaction (MobileHCI) (2024)

5. **Rahul Islam**, Sang Won Bae. "PupilSense: Detection of Depressive Episodes Through Pupillary Response in the Wild" IEEE International Conference on Activity and Behavior Computing (2024)
6. Tammy Chung, Sang Won Bae, Tongze Zhang, Melik Ozolcer, **Rahul Islam**, Anind Dey, Yiyi Ren, Brian Suffoletto, Aidan GC Wright, Trishnee Bhurosy. "Moving Toward Personalized Behavioral Medicine: Integrating Smartphone-based GPS Data into a Digital Alcohol Intervention" Society of Behavioral Medicine/Annals of Behavioral Medicine (2024)
7. **Rahul Islam**, Sang Won Bae. "MicroFlow: Advancing Affective States Detection in Learning Through Micro-Expressions." CESUN (2023).
8. Melik Ozolcer, **Rahul Islam**, Abdullah Mohammed, Tongze Zhang, Sang Won Bae, Ting Liao "Towards Designing Empathetic and Trustworthy AI Chatbots: an Exploratory Study." CESUN (2023).
9. Sang Won Bae, Brian Suffoletto, Tongze Zhang, Tammy Chung, Melik Ozolcer, **Rahul Islam**, and Anind K. Dey. "Leveraging Mobile Phone Sensors, Machine Learning, and Explainable Artificial Intelligence to Predict Imminent Same-Day Binge-drinking Events to Support Just-in-time Adaptive Interventions: Algorithm Development and Validation Study." JMIR Formative Research (2023).
10. Sang Won Bae, Tammy Chung, **Rahul Islam**, Brian Suffoletto, Jiameng Du, Serim Jang, Yuuki Nishiyama, Raghu Mulukutla, and Anind Dey. "Mobile phone sensor-based detection of subjective cannabis intoxication in young adults: A feasibility study in real-world settings." Drug and Alcohol Dependence (2021).
11. Karan Ahuja, **Rahul Islam**, Ferdous Barbhuiya, Varun Parashar, Kuntal Dey, Chris Harrison, and Mayank Goel. "EyeSpyVR: Interactive Eye Sensing Using Off-the-Shelf, Smartphone-Based VR Headsets." ACM IMWUT/UbiComp (2018).
12. Karan Ahuja, **Rahul Islam**, Ferdous Barbhuiya, and Kuntal Dey. "CNNs for Ocular Smartphone-Based Biometrics." Pattern Recognition Letters Journal (PRL) (2017).
13. Utkarsh Dwivedi, Karan Ahuja, **Rahul Islam**, Seema Nagar, Ferdous Barbhuiya, and Kuntal Dey. "EyamKayo: Interactive Gaze and Facial Expression Captcha." In Proceedings of Intelligent User Interface (ACM IUI) (2017).
14. Karan Ahuja, **Rahul Islam**, Ferdous Barbhuiya, and Kuntal Dey. "A Preliminary Study of CNNs for Iris and Periocular Verification in the Visible Spectrum." In Proceedings of 23rd International Conference on Pattern Recognition (ICPR) (2016).
15. **Rahul Islam**, Karan Ahuja, Sandip Karmakar, and Ferdous Barbhuiya. "SenTion: A framework for Sensing Facial Expressions." (arXiv preprint arXiv:1608.04489)(2016).

Workshop

1. **Rahul Islam**, Sang Won Bae. "Revolutionizing Mental Health Support: An Innovative Affective Mobile Framework for Dynamic, Proactive, and Context-Adaptive Conversational Agents." ACM IMWUT/UbiComp, GenAI4PC Symposium (2023).

TOOLS & TECHNOLOGIES

- **Machine Learning and Computer Vision:** OpenCV, Sci-Kit, Dlib, Keras, PyTorch, Pandas, Matplotlib
- **Large Language Models (LLM):** OpenAI, LangChain
- **Programming:** Python, Kotlin, C, JS, HTML
- **MLOps:** Apache Airflow, Weights & Biases, BentoML, Docker, Kubernetes
- **Database:** MongoDB, MySQL, Redis, BigQuery
- **Cloud:** Google Cloud, AWS
- **Others:** Android Development, Unity 3D, Git, Celery, Flask, GitLab CI/CD

AWARDS

2024 - Academic Achievement in an SSE Doctoral Program
 2014 - Chief Minister Award Meritorious Student of Assam

SCIENTIFIC REVIEWING

ACM IMMUT/Ubicomp	2022, 2023, 2024
OzCHI	2024
ACM CHI	2024, 2025
ACM UIST	2024
Elsevier CVIU	2017

TEACHING EXPERIENCE

- **Fundamentals of Quantitative Software Engineering**, TA, Stevens (2024)
- **Decision Making Via Data Analysis Techniques**, Guest Lecture, Stevens (2024)
- **Data-Mining and Applied Machine Learning**, TA, Stevens (2024)
- **Informatics for Engineering Management**, Guest Lecture, Stevens (2023)
- **Fundamentals of Software Engineering**, TA, Stevens (2023)

SELECTED PRESS COVERAGE

Neuroscience News AI Detects Depression Through Eyes and Facial Cues	2024
Medical Xpress AI-powered apps show potential for detecting depression through eye snapshots	2024
News Medical Smartphone-based AI systems track subtle facial, pupil signals to identify depression	2024
Science Daily When detecting depression, the eyes have it	2024
Hindustan Times You smile more when you're depressed: Pilot AI-powered apps can detect depression early ...	2024
StudyFinds.org Sad eyes are real – Apps may soon recognize depression in your face	2024
New Scientist AI can detect if you have recently smoked cannabis	2023
Forbes Your Smartphone Can Tell If You're High On Marijuana, Study Finds	2021

REFERENCES

Dr. Sang Won Bae
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Research Scientist @ Google
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Senior Principal
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u2ckuntal@gmail.com