

# JESSICA SHARMIN RAHMAN

## PhD Candidate

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in [jessica-s-rahman](#)

## EXPERIENCE

### Academic Tutor

#### The Australian National University

📅 July 2018 – Present

- COMP3900/6390 Human Computer Interface Design and Evaluation and COMP1710/6780 Web Development and Design

### Research Assistant

#### Immersive Analytics Lab, CSIRO

📅 February 2020 – May 2020

- Immersive Data Visualisation of Population-Scale Genome Architectures

### Chief Academic Tutor

#### The Australian National University

📅 February 2019 – June 2019

- COMP3710, Topics in Computer Science

## SELECTED PROJECTS

### Music and Emotion

📅 April 2019 – present

- Collected physiological signals such as GSR, HRV, EEG, functional imaging of brain and eye gaze behavior to understand effects of music in identifying emotion from different categories of videos (Analysis is ongoing)

### Immersive Data Visualisation of Population-Scale Genome Architectures

📅 February 2020 – May 2020

- Conducted interviews of experts for the project
- Performed qualitative analysis on the data to identify recommendations for the visualization methods
- Prepared evaluation reports for the project

### Understanding psychophysiological behavior during reading and music listening

📅 May 2018 – December 2018

- Collected physiological signals such as GSR, HRV, EEG and eye gaze behavior to understand effects of different music genres on emotional response and reading behavior
- Analyzed the physiological signals using machine learning techniques to predict participants' emotional response

## EDUCATION

### Doctor of Philosophy, Engineering and Computer Science

#### The Australian National University

📅 December 2017 – Present

### Bachelors of Science (Honors) in Computer Science and Engineering

#### University of Dhaka

📅 January 2012 – March 2016

## SKILLS

Physiological Signal Processing

EEG, fNIRS, EDA, BVP, Eye Gaze Analysis

User Experience Research

Qualitative Analysis

Quantitative Analysis

Python

Matlab

C/C++

Pandas

Numpy

Scikit-learn

Tensorflow

Keras

Jupyter

HTML

CSS

JavaScript

PHP

## ACHIEVEMENTS

- Winner of People's Choice Award in ANU 3 Minute Thesis Finals (2020)
- Selected as 1 of the 5 students to represent The Australian National University in Global Young Scientists' Summit (GYSS) in Singapore (2020)
- Recipient of Australian Government Research Training Program International Fee Offset and Stipend Scholarship (2017-2021)
- Recipient of RFL Inspiring Women Award in Category: Leaders of Tomorrow
- Recipient of EBL-DUAA Inspiration Scholarship (2015)

## SELECTED PROJECTS

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### Advanced Analytics to Reveal Novel Insights into 'Worth of Water'

📅 March 2017 – August 2017

- New South Wales Department of Primary Industries (Water) project in Collaboration with Advanced Analytics Institute, UTS, Sydney
- Applied visualization techniques to identify useful insights on water quality of Australia using Javascript

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### Kinect Based Fruit Names and Etiquette Learning app

📅 July 2015

- Windows application built using C# and Kinect V2 sensors for Human Computer Interaction course
- Conducted observation, interviews and paper prototype testing to gather requirements to build educational applications for children with autism

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### HR Management Tool

📅 June 2014

- Web based tool developed using adapter design pattern and bootstrap
- Winner of Startup DU: Business Process Tool Competition

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## PUBLICATIONS

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- Rahman, J. S., T. Gedeon, S. Caldwell, R. Jones, and Z. Jin (2021). "Towards Effective Music Therapy for Mental Health Care Using Machine Learning Tools: Human Affective Reasoning and Music Genres". In: *Journal of Artificial Intelligence and Soft Computing Research* 11.1, pp. 5–20. DOI: <https://doi.org/10.2478/jaiscr-2021-0001>.
- Brewer, Madeline and Jessica Sharmin Rahman (2020). "Pruning Long Short Term Memory Networks and Convolutional Neural Networks for Music Emotion Recognition". In: *International Conference on Neural Information Processing*. Springer, pp. 343–352.
- Rahman, J. S., T. Gedeon, S. Caldwell, and R. Jones (2020). "Brain Melody Informatics: Analysing Effects of Music on Brainwave Patterns". In: *2020 International Joint Conference on Neural Networks (IJCNN)*, pp. 1–8. DOI: 10.1109/IJCNN48605.2020.9207392.
- Rahman, J. S., M. Z. Hossain, and T. Gedeon (2020). "Are paired or single stimuli better to recognize genuine and posed smiles from observers' GSR". in: *Proceedings of the 32nd Australian Conference on Human-Computer-Interaction*. OZCHI'20. Online: Association for Computing Machinery.
- Renkin, Melanie and Jessica Sharmin Rahman (2020). "Improving the Stability of a Convolutional Neural Network Time-Series Classifier Using SeLU and Tanh". In: *International Conference on Neural Information Processing*. Springer, pp. 788–795.
- Rahman, J. S., T. Gedeon, S. Caldwell, R. Jones, M. Z. Hossain, et al. (2019). "Melodious Micro-frissons: Detecting Music Genres From Skin Response". In: *2019 International Joint Conference on Neural Networks (IJCNN)*, pp. 1–8. DOI: 10.1109/IJCNN.2019.8852318.

## AFFILIATIONS

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- Associate Paper Chair of DIS 2021: ACM Designing Interactive Systems Conference (2021)
- Logistics Chair of OzCHI 2020: 32nd Australian Conference on Human Computer Interaction (2020)
- Program Committee Member of ICONIP 2019: 26th International Conference on Neural Information Processing of the Asia Pacific Neural Network Society (2019)
- Reviewer for Elsevier Neural Networks Journal, CHI '21, OzCHI '20, OzCHI '19, ICONIP '19
- Dance Crew Member at Project Beats Dance Studio (2019 - present)

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## REFEREES

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**Prof. Tom Gedeon**

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✉ [sabrina.caldwell@anu.edu.au](mailto:sabrina.caldwell@anu.edu.au)

- Rahman, J. S., M. Z. Hossain, and T. Gedeon (2019). "Measuring Observers' EDA Responses to Emotional Videos". In: *Proceedings of the 31st Australian Conference on Human-Computer-Interaction*. OZCHI'19. Fremantle, WA, Australia: Association for Computing Machinery, pp. 457–461. ISBN: 9781450376969. DOI: 10.1145/3369457.3369516.
- Rahman, Jessica S et al. (2018). "Connectivity Based Method for Clustering Microbial Communities from Metagenomics Data of Water and Soil Samples". In: *2018 International Joint Conference on Neural Networks (IJCNN)*. IEEE, pp. 1–8.
- Chowdhury, Ananta, Jessica Sharmin Rahman, and Md Shiplu Hawlader (2016). "Well-connectedness-a novel measure for improving protein complex detection from PPI network". In: *2016 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB)*. IEEE, pp. 1–6.