

# JESSICA SHARMIN RAHMAN

## PhD Candidate

@ jessica.rahman@anu.edu.au

+61 470 211 219

https://jessicarahman.github.io/

in jessica-s-rahman

## EXPERIENCE

### Lecturer

#### The Australian National University

February 2021 – Present

- COMP4660/8420 Neural Networks, Deep Learning and Bio-inspired Computing (Lecturer for the Fuzzy Logic Section)

### Subject Matter Expert

#### OpenLearning Limited

May 2021 – Present

- CS101 Introduction to Computer Science

### Chief Academic Tutor

#### The Australian National University

February 2019 – Present

- COMP1710/6780 Web Development and Design and COMP3710, Topics in Computer Science

### 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

## 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

### 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

## 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

Affective Computing

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 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)
- 1st Place in Australian Dance Crew Championship ACT Qualifier (2021)
- Recipient of RFL Inspiring Women Award in Category: Leaders of Tomorrow
- Recipient of EBL-DUAA Inspiration Scholarship (2015)
- Winner of Startup DU: Business Process Tool Competition (2014)

## SELECTED PROJECTS

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### 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

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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
- Conducted observation, interviews and paper prototype testing to gather requirements to build educational applications for children with autism

### HR Management Tool

📅 June 2014

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

## PUBLICATIONS

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- Rahman, J. S., T. Gedeon, S. Caldwell, and R. Jones (2021). "Can Binaural Beats Increase Your Focus? Exploring the Effects of Music in Participants' Conscious and Brain Activity Responses". In: *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. CHI'21. Online.
- 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.
- Brewer, M. and J. S. 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.
- 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.

## AFFILIATIONS

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- Associate Chair of DIS 2021: ACM Designing Interactive Systems Conference (2021)
- Logistics Chair of OzCHI 2020: 32nd Australian Conference on Human Computer Interaction (2020)
- Student Volunteer of IUI 2021: 26th Annual ACM Conference on Intelligent User Interfaces (2021)
- 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, INTERACT '21, DIS '21, OzCHI '20, OzCHI '19, ICONIP '19
- Member of the Association for Computing Machinery (ACM)
- Member of the Institute of Electrical and Electronics Engineers (IEEE)
- Dance Crew Member at Project Beats Dance Studio (2019 - present)

## REFEREES

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**Prof. Tom Gedeon**

@ The Australian National University

✉ tom@cs.anu.edu.au

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**Dr. Sabrina Caldwell**

@ The Australian National University

✉ sabrina.caldwell@anu.edu.au

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**Dr. Henry Gardner**

@ The Australian National University

✉ henry.gardner@anu.edu.au

- Renkin, M. and J. S. 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.
- 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, pp. 457–461.
- Rahman, J. S., J. Li, 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, A., J. S. Rahman, and M.S. 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.