Anuradha **Welivita**

RESEARCHER — HUMAN-COMPUTER INTERACTION · ARTIFICIAL INTELLIGENCE · USER EXPERIENCE

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Education

Ph.D. in Human-Computer Interaction
Switzerland

HUMAN-COMPUTER INTERACTION GROUP, SCHOOL OF COMPUTER AND COMMUNICATION SCIENCES, EPFL
Sep 2018-Sep 2023

- Thesis **"Empathetic Conversational Agents for Distress Support" nominated for EPFL doctoral awards**. Advisor: Dr. Pearl Pu.
- **Doctoral Fellowship recipient** (selected as one of **top 9% out of 550** international applications)
- Research areas: *Conversational AI, Empathetic Response Generation, Chatbots for Distress Support, Human Computation, Psycholinguistic Analysis and Qualitative Coding of Human Discourse, Automatic and Human Evaluation of Chatbots.*

B.Sc. in Computer Science and Engineering
Sri Lanka

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, UNIVERSITY OF MORATUWA
Mar 2013-Apr 2017

- **GPA: 4.12/4.20 (Ranked 1st in the Faculty of Engineering out of 930 students)**
- **Valedictorian** at the General Convocation of University of Moratuwa.

Work Experience

Postdoctoral Researcher
Switzerland

HUMAN-COMPUTER INTERACTION GROUP, EPFL
Sep 2023 - Present

- Conducted a **between-groups study involving 600 participants** to evaluate the capacity of ChatGPT to empathize compared to humans.
  - *Technologies and platforms: Prolific, Python, Pandas, React, NodeJS*

Research and Teaching Assistant
Switzerland

HUMAN-COMPUTER INTERACTION GROUP, EPFL
Feb 2019 - Aug 2023

- Developed and evaluated empathetic conversational agents for chitchat and distress support.
- **Qualitatively coded** ≈500 human dialogues to derive a taxonomy of empathetic response intents.
- Conducted **large-scale human computation and evaluation experiments involving both laypersons and professional counselors** to annotate dialogue corpora and evaluate chatbot models.
  - *Technologies and platforms: Amazon MTurk, UpWork, Python, Pandas, React, NodeJS, Flask*
- Supervised 8 Master's and 2 Bachelor's research and engineering projects involving **Natural Language Processing**, **Development and evaluation of dialogue models**, **Large Language Models**, **Human Computation**, **Quantitative Research**, and **Design Thinking**. One project involved using *Assistive Technology for Alzheimer's patients* [Report]
- Conducted exercise sessions, prepared quizzes, and graded exams in 5 Computer Science courses: "Interaction Design", "Information, Computation, Communication", "Object-Oriented Programming", "Natural Language Processing", and "Introduction to Database Systems".
- Supervised 8 student projects to **design new user experiences** for "Behaviour change", "Discovering new music", and "Assistive technology"..

Research Assistant
Switzerland

SALATHÉ LAB, EPFL
Sep 2018 - Jan 2019

- Conducted a **large-scale human computation experiment to label and trace boundaries of ≈25K food images**, as a part of the MyFoodRepo project [Report].
  - *Technologies and platforms: Amazon MTurk, Microsoft Common Objects in Context UI, Python, React, NodeJS*
- Developed a food image segmentation and classification pipeline identifying ≈500 food items.
  - *Technologies: Python, Mask R-CNN, Inception V3*

Lecturer (Contract)
Sri Lanka

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, UNIVERSITY OF MORATUWA
Mar 2017-Aug 2018

- Co-taught and evaluated 3 Computer Science courses with over 120 registered students: "Database Systems", "Modular Software Development", and "Presentation and Communication Skills"
- Lab coordinator of the course "Programming Fundamentals" with over 800 students.

Trainee Software Engineer
Sri Lanka

99X TECHNOLOGY
Oct 2015 - Mar 2016

- Constructed a machine-learning-based platform that collected user behavior data and generated an adaptive user interface based on different user profiles identified [Report].
  - *Technologies: Piwik Web Analytics, Google Analytics, Amazon Web Services, AngularJS, NodeJS*

Google Summer of Code Student

THE FEDORA PROJECT

Sri Lanka

May 2015 - Aug 2015

- Worked on a **user-experience and functionality overhaul** of the AskFedora website. [GitHub]
    - *Technologies: High-fidelity prototyping, HTML, CSS, Javascript, Python, Django, OpenShift*

Projects

Empathetic Conversational Agents for Distress Support

P.HD. THESIS

EPFL, Switzerland

Sep 2019 - Aug 2023

- Curated large-scale empathetic and distress support dialogue datasets and trained and evaluated empathetic dialogue agents that can respond to a wide range of emotions in a more reliable, interpretable, and professional manner than existing dialogue agents.
    - *Research areas: Empathetic Conversational Agents, Emotion Recognition, Large Language Models, Controllability and Interpretability of dialogue models, Natural Language Processing, Human-Computer Interaction, Machine Learning, Information Retrieval*
    - *Technologies & methods: Data curation and analysis, Training and evaluating machine learning models, Automatic and human evaluation of dialogue models, Crowd annotation, Data visualization, Knowledge-graphs, Qualitative coding, Python, PyTorch, Keras, Tensorflow*

Empathetic Dialogue Agent for Consumer Health Question Answering

SEMESTER PROJECT

EPFL, Switzerland

Feb 2019 - Aug 2019

- Development and evaluation of a dialogue agent that can succintly answer consumer health questions in an empathetic manner.
    - *Methods and technologies: Information retrieval, Web scraping, Python, RASA*

Instance Segmentation and Classification of Food Images

SEMESTER PROJECT

EPFL, Switzerland

Sep 2018 - Jan 2019

- Training and evaluation of neural network models for instance segmentation and classification of food images, as a part of the MyFoodRepo project
    - *Methods and technologies: Information retrieval, Web scraping, Python, RASA*

HealthyTogether

QUALITATIVE RESEARCH PROJECT

EPFL, Switzerland

Sept 2019 - Feb 2020

- Qualitative user study with 10 participants to assess the efficacy and acceptance of "Healthy- Together", a mobile app designed to improve the fitness of users by monitoring their daily number of steps and recommending behavior interventions.
    - *Technologies and methods: Domain research, Competitive analysis, Storyboarding, User Interviews, Affinity wall, Themetic analysis, FluidUI, JavaScript, React Native, Expo, Fitbit API*

User Perceptions of Fairness in Two-sided Recommender Systems

QUANTITATIVE RESEARCH PROJECT

EPFL, Switzerland

Sept 2022 - Feb 2023

- Quantitative user study with 1,300 participants from Amazon Mechanical Turk and 219 participants from UpWork to investigate their perceptions of fairness in Tiktok.
    - *Technologies and methods: Exploratory Factor Analysis, Structural Equation Modeling, R, Lavaan, IBM SPSS*

Interactive Workflow Generator to Support Bioinformatics Analyses

USABILITY STUDY

University of Moratuwa, Sri Lanka

Mar 2017 - Aug 2018

- Development of an interactive web-based software solution for simple construction and efficient execution of bioinformatics workflows and evaluation of it against existing bioinformatics workflow generators using 10 human participants.
    - *Technologies and methods: System Usability Scale, A/B Testing, Open-ended interviews, AngularJS, NodeJS, Amazon Web Services*

Real-time Face Tracking and Head Pose Estimation for Mobile Augmented Reality

FINAL YEAR RESEARCH AND DEVELOPMENT PROJECT

University of Moratuwa, Sri Lanka

May 2016 - Mar 2017

- Development of a face tracking and head pose estimation plugin for the Unity3D game engine, which can be used in building mobile augmented reality applications.
    - *Technologies: MATLAB, C#, Unity3D, OpenCV*

Honors & Awards

2023	**EDIC Doctoral Awards Nominee,** doctoral thesis titled "Empathetic Conversational Agents for Distress Support" nominated unanimously by the thesis committee for EDIC, EPFL doctoral awards.	*Switzerland*
2019	**Google Inside Look Attendee,** one of 31 students selected from thousands of applicants in EMEA to attend Google's Inside Look 2019 program, consisting of technical and developmental content and workshops.	*Switzerland*
2018	**EDIC Doctoral Fellowship,** awarded for the top 9% out of 550 international applicants.	*Switzerland*
2017	**Valedictorian at the General Convocation of University of Moratuwa,** awarded for obtaining the highest score at the evaluation of the "Most Outstanding Student of the Year" award from among four departments.	*Sri Lanka*
2017	**Gold Medalist - Department of Computer Science and Engineering,** awarded for obtaining the highest overall GPA of 3.8 or above at the B.Sc. Engineering Honours Degree examinations out of 125 students.	*Sri Lanka*
2017	**CINTEC Award - University of Moratuwa,** awarded for obtaining the highest marks for the Final Year Research & Development Project.	*Sri Lanka*
2017	**Dean's List in all academic semesters - University of Moratuwa,** awarded for achieving a semester GPA of 3.80 or above out of 4.20.	*Sri Lanka*

Selected Publications

Full list of publications available [here].

2023	**Welivita, A.**, and Pu, P., "Boosting Distress Support Dialogue Responses with Motivational Interviewing Strategy", In *Findings of the Association for Computational Linguistics (ACL)*. [PDF]
2023	**Welivita, A.**, Yeh, C., and Pu, P., "Empathetic Response Generation for Distress Support", In *the 24th Meeting of the Special Interest Group on Discourse and Dialogue (SIGDIAL)*. [PDF]
2023	**Welivita, A.**, and Pu, P., "A survey of consumer health question answering systems", *AI Magazine*. [PDF]
2022	**Welivita, A.** and Pu, P., "Curating a Large-Scale Motivational Interviewing Dataset Using Peer Support Forums", in *Proceedings of the 29th International Conference on Computational Linguistics (COLING)*. [PDF]
2022	Svikhnushina, E., Voinea, I., **Welivita, A.**, and Pu, P. "A Taxonomy of Empathetic Questions in Social Dialogs", in *Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics (ACL)*. [PDF]
2021	**Welivita, A.** and Pu, P., "HEAL: A Knowledge Graph for Distress Management Conversations", in *Proceedings of the 36th AAAI Conference on Artificial Intelligence*. [PDF]
2021	**Welivita, A.**, Xie, Y., and Pu, P., "A Large-Scale Dataset for Empathetic Response Generation", in *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP)*. [PDF]
2020	**Welivita, A.** and Pu, P., "A Taxonomy of Empathetic Response Intents in Human Social Conversations", in *Proceedings of the 28th International Conference on Computational Linguistics (COLING)*. [PDF]
2018	**Welivita, A.**, Perera, I., Meedeniya, D., Wickramarachchi, A. and Mallawaarachchi, V., "Managing Complex Workflows in Bioinformatics: An Interactive Toolkit with GPU Acceleration", in *IEEE Transactions on NanoBioscience*. [PDF]
2017	**Welivita, A.**, Perera, I. and Meedeniya, D., "An Interactive Workflow Generator to Support Bioinformatics Analysis through GPU Acceleration", in *IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*. [PDF]
2017	**Welivita, A.**, Nimalsiri, N., Wickramasinghe, R. and Pathirana U., "Unifying E-Commerce and Markerless Mobile Augmented Reality Using Real-time Face Tracking and Head Pose Estimation", in *Adjunct Proceedings of the International Conference on Human-Computer Interaction (INTERACT)*. [PDF]
2017	**Welivita A.**, Nimalsiri N., Wickramasinghe R., Pathirana U., and Gamage, C., "Virtual Product Try-On Solution for E-Commerce Using Mobile Augmented Reality", in *International Conference on Augmented Reality, Virtual Reality and Computer Graphics (AVR)*. [PDF]

Conference Participation

- Presenting author and attendee at the **ACL'23 (Toronto, Canada), SIGDial'23 (Prague, Czech Republic), COLING'22 (Virtual), AAAI'21 (Virtual), EMNLP'21 (Virtual), COLING'20 (Virtual), BIBM'17 (Kansas, United States), and INTERACT'17 (Mumbai, India)** conferences.
- Attendee at the **CHI'23 (Virtual)** conference (Course participation: **"Structural Equation Modeling in HCI Research using SEMinR"**).
- Assisted in reviewing at the **EMNLP'22** conference.

Skills

UX Research Methods	**Qualitative Research** (Domain research, Competitive analysis, Ethnographic Interviews, User Personas, User Journeys, Empathy Map, Storyboarding, Affinity Map),
	Quantitative Research (Survey Design, Exploratory Factor Analysis, Structural Equation Modeling),
	Usability Testing, A/B Testing
Programming Languages	Python, JavaScript, R, Java, C, MATLAB, SQL, HTML, CSS
Libraries & Frameworks	Pandas, Plotly, SEMinR, Laavan, React, NodeJS, Flask, React Native, Expo
Programming Tools	Git, PyCharm, IntelliJ IDEA
Crowdsourcing Platforms	Amazon Mechanical Turk, UpWork, Prolific
Design and Prototyping:	FluidUI, Figma
Languages	**Sinhalese** (Native), **English** (Advanced - C1), **French** (Beginner - A1/A2)
Other	**Quick Learning** (Becoming quickly adept at NLP and HCI research methods while doing my P.hD.),
	Presentation & Communication (Presenting research to diverse audiences at conferences and industry),
	Teamwork (Working with industry software teams and interdisciplinary research teams in academia),
	Flexibility (Working extra hours to meet research paper deadlines and industry release deadlines),
	Strong Work Ethic (10+ first-authored publications at top conferences and journals within a span of 7 years)

Personal Information

31 years old, Married, Female, Sri Lankan citizen, Currently on a B permit in Switzerland.