

Raju Maharjan

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PROFILE

Having submitted my Ph.D. thesis recently, I am looking for new research opportunities to contribute within the areas of HCI and UbiComp. I have a strong background in UI/UX and mixed-method research design. My research interests include health technology and speech interfaces.

EDUCATION

12/2021(Expected). Ph.D. in Digital Health Technology, Technical University of Denmark (DTU)

Thesis Title. Speech-Enabled Conversational Agents to Support the Self-Report of Mental Health & Wellbeing

01/2017. MA in Web & Multimedia Design, Touro College, NY

06/2013. BSc. in Dynamic Web Design, The City University of New York, NY

08/2009. AAS. in New Media Technology, The City University of New York, NY

RESEARCH EXPERIENCE

08/2019 – Present. *Sofia*

As a part of a larger project that aims to improve the quality of life of people living with mental illness, two distinct empirical studies were carried out.

The first study developed a questionnaire-driven conversational agent with state-based and free-form conversational designs and evaluated the accuracy of the self-reports by contrasting 59 participants' responses via each conversational design compared to the paper-based responses to the same questionnaire in a lab setting.

The second study developed a conversational agent that enabled daily self-report of wellbeing by asking three open-ended questions and an additional questionnaire fortnightly; then evaluated the ecological validity of the system in supporting the self-report of mental health and wellbeing by conducting a four-week mixed-method field deployment study during which 20 people living with affective disorders used the system daily to self-report about their wellbeing.

02/2018 – 07/2019. *mCardia*

The goal of this research project was to design a smartphone-based ambulatory heart monitoring system.

Adopting the user-centered design approach, a series of interviews and co-design workshops with both patients and clinicians were conducted to develop a Requirement Analysis Document (RAD).

According to the requirements, the prototype of the *mCardia* system was designed. It included (i) a patient-facing mobile app that enabled real-time reflection on the cardiovascular data such as Heart Rate (HR), HR Variability, and MET level collected via a two-channel Holter device and contextual information, including sleep and step count and (ii) a web app that allowed clinicians to analyze and annotate the ECG data with the contextual information.

06/2011 – 01/2012. *Artbox*

Artbox is an NSF-funded app development project with an aim to create an engaging online community of artists and art enthusiasts. The challenge was to engage a diverse group of users, help them make connections with each other, and encourage them to keep coming back to the app.

Conducted semi-structured interviews with artists and patrons to investigate how they use technology and social media to interact with art.

Conducted competitor analysis and visited museums, auction houses, and art exhibitions to conceptualize the business model of the app.

Based on the findings, a unique concept of a local, social, and mobile app was developed and designed.

TEACHING & MENTORING EXPERIENCE

07/2019 – 12/2019. Student Mentored: Chen Wang, MSc., Digital Media Engineering, DTU
01/2019 – 03/2019. Teaching Assistant: Personal Data Interaction for Mobile & Wearables, DTU
01/2019 – 01/2019. Teaching Assistant: User Experience Engineering, DTU
09/2018 – 11/2018. Teaching Assistant: User Experience Design Prototyping, DTU
07/2007 – 05/2008. Technology Mentor: La'Guardia Community College, CUNY

AWARDS & HONORS

2012 – 2013. Thomas W. Smith Fellowship, The City University of New York, NY
12/12/2012. Promise Prize, Code for Change, New York University, NY

PUBLICATIONS

Journals

Raju Maharjan, Kevin Doherty, Darius Adam Rohani, Per Bækgaard, and Jakob E. Bardram. 2021. Experiences of a Speech-Enabled Conversational Agent for the Self-Report of Wellbeing Among People Living with Affective Disorders: An In-The-Wild Study. *ACM Trans. Interact. Intell. Syst.* DOI:<https://doi.org/10.1145/3484508> [ACCEPTED]

Devender Kumar, **Raju Maharjan**, Alban Maxhuni, Helena Dominguez, Anne Frølich, and Jakob E. Bardram. 2021. mCardia: A Context-Aware Ambulatory ECG Collection System for Arrhythmia Screening. *ACM Trans. Comput. Healthcare* [ACCEPTED]

Conferences

Raju Maharjan, Darius Adam Rohani, Per Bækgaard, Jakob Bardram, and Kevin Doherty. 2021. Can we talk? Design Implications for the Questionnaire-Driven Self-Report of Health and Wellbeing via Conversational Agent. *CUI 2021 - 3rd Conference on Conversational User Interfaces*. Association for Computing Machinery, New York, NY, USA, Article 5, 1–11. DOI:<https://doi.org/10.1145/3469595.3469600>

Giovanna Nunes Vilaza, **Raju Maharjan**, David Coyle, and Jakob Bardram. 2020. Futures for Health Research Data Platforms From the Participants' Perspectives. In *Proceedings of the 11th Nordic Conference on Human-Computer Interaction: Shaping Experiences, Shaping Society (NordiCHI '20)*. Association for Computing Machinery, New York, NY, USA, Article 39, 1–14. DOI:<https://doi.org/10.1145/3419249.3420110>

Conference Workshops

Raju Maharjan, Per Bækgaard, and Jakob E. Bardram. 2019. “Hear me out”: smart speaker based conversational agent to monitor symptoms in mental health. In *Adjunct Proceedings of the 2019 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2019 ACM International Symposium on Wearable Computers (UbiComp/ISWC '19 Adjunct)*. Association for Computing Machinery, New York, NY, USA, 929–933. DOI:<https://doi.org/10.1145/3341162.3346270>

Raju Maharjan, Per Bækgaard, and Jakob E. Bardram. 2018. Leveraging Multi-modal User-labeled Data for Improved Accuracy in Interpretation of ECG Recordings. In *Proceedings of the 2018 ACM International Joint Conference and 2018 International Symposium on Pervasive and Ubiquitous Computing and Wearable Computers (UbiComp '18)*. Association for Computing Machinery, New York, NY, USA, 636–641. DOI:<https://doi.org/10.1145/3267305.3267548>

Pegah Hafiz, **Raju Maharjan**, and Devender Kumar. 2018. Usability of a mood assessment smartphone prototype based on humor appreciation. In *Proceedings of the 20th International Conference on Human-Computer Interaction with Mobile Devices and Services Adjunct (MobileHCI '18)*. Association for Computing Machinery, New York, NY, USA, 151–157. DOI:<https://doi.org/10.1145/3236112.3236134>

COMMUNITY ACTIVITIES

- 2019. Student Volunteer, Ubicomp 2019, Conference on Ubiquitous, Pervasive and Wearable Computing
- 2018. Summer School, Humanistic HCI, UBISS '18, 9th International UBI Summer School 2018
- 2018. Workshop Presentation, UbiComp 2018, Conference on Ubiquitous, Pervasive and Wearable Computing
- 2018. Poster Presentation, Mobile HCI 2018

PAPER REVIEWING

- 2021. ACM International Symposium on Wearable Computers (ISWC)
- 2019 – 2020. ACM Conference on Human Factors in Computing Systems (CHI)
- 2020. EAI International Conference on Pervasive Computing Technologies for Healthcare

PROFESSIONAL EXPERIENCE

- 10/2017 – 01/2018. Frontend Developer, Google, CA
- 03/2015 – 08/2017. UI/UX Engineer, Abbott Point of Care, NJ
- 08/2013 – 07/2014. Frontend Developer, Harland Clarke, TX
- 04/2012 – 05/2012. Frontend Developer, NYC Human Resource Administration, NY
- 06/2011 – 01/2012. Director of Technology, Artbox – NYC College of Technology, NY
- 04/2011 – 01/2012. Web Designer & Developer, NYC College of Technology, NY
- 11/2009 – 09/2010. Web Developer, IBREA Foundation, NY
- 11/2009 – 10/2010. Web Developer, Iced Media and Boom Digital Ventures, NY
- 07/2007 – 05/2008. Technology Mentor, CUNY Research Foundation, NY

SKILLS

Prototyping

Conversational Agents
Chat-bots
Mobile apps
Web apps
3D Models

Design

Dialogflow
Figma
Axure
Illustrator
Photoshop
Indesign
After Effects
Premiere Pro
Autodesk Maya

Development

Javascript
PHP
HTML
CSS
MySQL/NoSQL
Java

Data Analysis

R
MS Excel
Python
Thematic Analysis

Communication

Effective presentation of concepts, methods, and findings using prototypes, graphics, charts and plots.
Effective oral and written communication.

Leadership

Facilitated workshops
Mentored students
Recruited team members
Trained new team members