Yumna Anwar (She/Her/Hers)

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EDUCATION

University of Iowa — Iowa city, IA
Ph.D. candidate in computer science — Expected May, 2024

University of Minnesota, Duluth — Duluth, MN
M.S. in computer science — May, 2019

Institute of Business Administration — Karachi, Pakistan
B.S. Computer Science — May 2017

RESEARCH EXPERIENCE

University of Iowa — Iowa city, IA
Graduate research assistant — 2019 - Present

- Design, train, optimize and deploy deep neural network models for noise suppression with low latency for hearing aid devices
- Designed and developed a robust and effective cough detector for clinic waiting rooms using deep learning techniques to identify coughs sounds and estimates the number of patients who report cough as a symptom during their clinic visit as a surveillance tool for respiratory disease outbreak.
- Collected, cleaned and annotated 348 hours of audio recordings from waiting rooms of multiple iowa city quick care clinics.
- Developed optimization technique of hearing aid configurations based on patients' feedback and auditory context using multi-arm bandit algorithms.

University of Minnesota, Duluth — Duluth, MN
Graduate research assistant — 2017-2019

- Designed and conducted an IRB study to collect Electrodermal activity (EDA) and heart rate variability (HRV) data using wearable sensors while participants are confronted with different emotionally evocative pictures and audios.
- Investigating how psychological changes (mood) affect physiological responses in humans when confronted with emotionally evocative pictures and audios and developed a predictive model for psychological changes that could be used to monitor patients with bipolar disorder
- Conducted a survey to investigate acceptance of robot assistance amongst elderly in a nursing home.
- Developed a nurse conversational agent (using NLP) on the robot pepper. The conversational agent program is being used as a basis of robots being deployed in multiple elderly care facilities in Minnesota.

WORK EXPERIENCE

University of Iowa — Iowa city, IA
Graduate teaching assistant — 2019-2020

- Conducted discussion groups and practical labs for discrete structures course

University of Minnesota, Duluth — Duluth, MN
Graduate teaching assistant — 2017-2019

- Conducted discussion groups and practical labs for visual basic, machine learning and data structures course

Afiniti Karachi, Pakistan
Analyst software engineer April 2017 - Aug 2017

- Data analysis, collection, cleansing, transformation and management of Afiniti clients call center data (Data warehousing, SQL).
- Develop ETL scripts for efficient and optimized setup of processes (Tools: Talend and SSIS), to ensure correct and timely loading and availability of data for AI modeling.

Toyota Indus Motors Karachi, Pakistan
Summer IT intern May 2016 - July 2016

- Developed dashboards for production downtime for efficiency and realtime analysis of delays in production chain.
- Documented business process mapping

SKILLS

- **Languages and platforms:**

Python(Tensorflow, keras, pytorch, scikit-learn), Apache TVM, R, Visual Basic, Matlab, Java, C, HTML, CSS, PHP, Swift, Objective-C, Jade, Node.js, javaScript, MySQL, SQL server, Oracle, Talend, SSIS, PowerBI, Tableau

- **Area of interest:**

Deep learning (Tensorflow, keras, pytorch), Database management, Reinforcement learning, multi-armed bandit, Dashboarding, Web development, Natural language processing

- **Grad course work:**

Deep learning, Regression & ANOVA in Health Sciences, Privacy and Anonymity, Design and Analysis of Algorithms, Advanced Data Structures, Advanced computer security, General Robotics, Machine learning, Natural language processing.

VOLUNTEER / EXTRACURRICULAR ACTIVITY

- **Women in Computing:** Duluth, MN
  Student representative at university of minnesota duluth 2017
- **LEGO Robotics Club for elementary students:**
  Mentored elementary students at Congdon park elementary to program and code LEGO robots. Duluth, MN 2018
- **Aiesec Denizli:**
  English language instructor at a summer camp for High school students in Denizli, Turkey. Denizli, Turkey 2015

AWARDS

- **Best student paper award** for paper titled “Audio-Based Cough Detection in Clinic Waiting Rooms”
- **Summer research fellowship award** from Department of Computer Science at the University of Minnesota Duluth.
- **Dean's Honors list** of BS. Computer Science at IBA (Institute of Business Administration, Karachi)

PUBLICATIONS

- **Audio-Based Cough Detection in Clinic Waiting Rooms** Yumna Anwar, Sean M. Mullan, Octav Chipara, Alberto M. Segre and Philip Polgreen.; IEEE-ICHI 2022, June 2022.
- **Personalizing over-the-counter hearing aids using pairwise comparisons** Vyas, Dhruv, Ryan Brummet, Yumna Anwar, Justin Jensen, Erik Jorgensen, Yu-Hsiang Wu, and Octav Chipara. Smart Health 23 (2022): 100231.
- **Framework to Predict Bipolar Episodes: Sensor fusion of electrodermal activity, heart rate variability and sleep patterns** Khan, A. Anwar, Y, (2018).; Intellisys IEEE, London, September 2018. [link]
- **Assistive Technologies for Bipolar Disorder: A Survey**
  Yumna Anwar and Dr. Arshia Khan, “” International Journal of Advanced Computer Science and Applications (IJACSA), 10(4), 2019. [link]
- **Robots in Healthcare: A review**
  Khan, A. , Anwar, Y. (2019) Computer Vision Conference; Las Vegas, April 2019. [link]
- **Wearable sensors and a multisensory music and reminiscence therapies application: To help reduce behavioral and psychological symptoms in person with dementia**
  Imtiaz, D., Anwar, Y, Khan, A. (2019)- accepted for publication Elsevier Journal of Smart and Connected Health.