Yumna Anwar

yumnaanwar95@gmail.com | 903 787 1740 | in
https://www.linkedin.com/in/yumna-anwar/

EDUCATION

University of Iowa | *PhD* — **Iowa City, IA**
Computer Science — 2019 - Present
- GPA: 3.98

University of Minnesota | *MS* — **Duluth, MN**
Computer Science — 2017 - 2019
- GPA: 3.92

Institute of Business Administration | *BS* — **Karachi, Pakistan**
Computer Science — 2013 - 2017
- GPA: 3.58
- Dean's Award

WORK EXPERIENCE

University of Maryland, Baltimore County — **May 2024 – Present**
Research Scientist — Baltimore, MD
- Work on a project for the U.S. Department of Defense, utilizing their proprietary data for model development and analysis.
- Apply signal processing techniques to data collected from wearable devices.
- Design, train, and optimize deep learning models for sleep detection using PPG, gyroscope, accelerometer, and temperature sensor data.

University of Iowa — **August 2019 – Present**
Research Assistant — Iowa City, IA
- Design, train, optimize and deploy deep neural network models in pytorch and tensorflow for noise suppression with low latency for embedded devices (hearing aid devices).
- Designed and developed an Android app to interact with PHL (running open Master Hearing Aid), enabling real-time gain configuration for real-world user studies.
- Designed and developed a robust and effective cough detector for clinic waiting rooms using deep learning techniques using tensorflow 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.
- Developed optimization technique of hearing aid configurations based on patients' feedback and auditory context using multi-arm bandit algorithms.

Minnesota Department of Transportation (MnDOT) — **June 2023 – Dec 2023**
Senior research student worker — Maplewoods, MN
- Road doctor research to detect moisture content and surface issues.
- Developed a user-interface and dashboard using streamlit to analyze ground-penetration radar data to identify moisture content.
- Training deep neural networks for detecting and classifying road cracking using video data.

University of Minnesota **August 2017 – July 2019**
Research Assistant Duluth, MN

- 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 Choregraphe software and Python NLP on the robot pepper by Softbank. The conversational agent program is being used as a basis of robots being deployed in multiple elderly care facilities in Minnesota.

Afiniti **Karachi, Pakistan**
Analyst software engineer April 2017 - August 2017

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

Toyota Indus Motors **Karachi, Pakistan**
Data science intern May 2016 - August 2016

- Developed dashboards for production downtime for efficiency and real-time analysis of delays in the production chain.
- Employed Microsoft Visio to map business processes, resulting in clear and efficient flow charts that improved process understanding and workflow management.

TEACHING EXPERIENCE

University of Iowa **August 2019 – May 2020**
Teaching Assistant Iowa City, IA

- Courses: discrete structures, cryptography

University of Iowa **August 2022 – Present**
Tutor Iowa City, IA

- Areas: Python, SQL.
- Offer one-on-one mentorship, improving student academic performance.
- Provided assignment support and exam preparation assistance.

University of Minnesota **August 2017 – May 2019**
Teaching Assistant Duluth, MN

- Courses: visual basic, machine learning, data structures.
- Led lab sessions in Visual Basic and Machine Learning, aiding 150 students.
- Provided assignment support and exam preparation assistance.
- Collaborated with faculty to develop teaching materials.
- Offered one-on-one mentorship, improving student academic performance.

SKILLS

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

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.

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.

PUBLICATIONS

Google Scholar Link

- 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.
- Personalising 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.
- 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.
- Robots in Healthcare: A review Khan, A. , Anwar, Y. (2019) Computer Vision Conference; Las Vegas, April 2019.
- Wearable sensors and a multisensory music and reminiscence therapies application: To help reduce behavioural and psychological symptoms in person with dementia Imtiaz, D., Anwar, Y, Khan, A. (2019)- accepted for publication Elsevier Journal of Smart and Connected Health.

AWARDS

2022 **Best student paper award** for paper titled "Audio-Based Cough Detection in Clinic Waiting Rooms".

2018 **Summer research fellowship award** from Department of Computer Science at the University of Minnesota Duluth.

2016 **Dean's Honors list** of BS. Computer Science at IBA (Institute of Business Administration, Karachi).

VOLUNTEER

2018 **Women in Computing:** Student representative at university of minnesota duluth.

2018 **LEGO Robotics Club for elementary students:** Mentored elementary students at Congdon park elementary to program and code LEGO robots.

2015 **Aiesec Denizli:** English language instructor at a summer camp for High school students in Denizli, Turkey.