# ZORAIZ QURESHI

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## EDUCATION

**University of Virginia,** School of Engineering & Applied Science, Charlottesville, VA ***Aug 2021 - Present***
MS Computer Science - GPA: 4.00

**Lahore University of Management Sciences,** Lahore, Pakistan ***Sep 2017 - May 2021***
BS Computer Science - GPA: 3.78

## SKILLS

- Languages: Python, C++, C#, JavaScript, Java, SQL.
- Tools and Frameworks: Git, Bash, MATLAB, Keras, PyTorch, FastAi, Kivy, PyQt, Unity3D, EasyAR, React, Redux, Google Cloud Platform, Flutter, Django, Flask, Nginx, Node.js, Firebase, MongoDB, CSS, Bootstrap, Stata, Figma, Selenium Webdriver, WebRTC, Socket.io.

## EXPERIENCE

*Graduate Research Assistant,* **University of Virginia,** Charlottesville, Virginia ***Aug 2021 - Present***
- Automating segmentation of dynamic 18F-FDG PET volumes and image-derived blood input function derivation pipeline by leveraging deep learning and image analysis with TensorFlow, MATLAB and MRTrix, under the supervision of Dr. Bijoy Kundu (Ph.D. Associate Professor of Radiology and Medical Imaging).

*Teaching Assistant - CS 315 Theory of Automata,* **Lahore University of Management Sciences,** Lahore, Pakistan ***Jan 2021 - May 2021***
- Evaluated a project based on development of a custom YAPL interpreter with PLY and knowledge of FSMs and CFGs.

*Teaching Assistant - CS 452 Computer Graphics,* **Lahore University of Management Sciences,** Lahore, Pakistan ***Sep 2020 - Dec 2020***
- Designed and evaluated a semester long project on animation and game design through Blender, Unity and Unreal Engine. Conducted live virtual lab sessions on rasterization, mesh editing, raytracing, cloth simulation and other core topics.

*Application Developer,* **Learn Interact Think,** Lahore, Pakistan ***May 2019 - Aug 2019***
- Built an AR educational mobile app for iOS and Android using Unity3D, focusing on interactive 3D projections from a user-customized bilingual storybook based on exploring the history and culture of Pakistan.
- Set up an automated and dynamic user preference-based server-side generation pipeline for these storybooks using PHP and TCPDF on order processing on the main web application.

## ACHIEVEMENTS

- Dean's Honor List 2017-2021 - BS Computer Science, Lahore University of Management Sciences.
- Winning Team (PianoTunesAR) - Wallifornia MusicTech Hackathon 2020 hosted by Hackathons International (1,000€).
- Winning Team (AgriScan) - IEEE LUMS CodinGuru 2020 hosted by Facebook Developer Circles Lahore.
- LUMS Students as Co-Researchers (ScR) Program 2020 Grant (50,000 PKR) received from the Office of Research and LUMS Learning Institute for Madadgaar.
- Completed the Google #CloudSeekho Challenge involving various QwikLab challenges based on Kubernetes deployment, serverless cloud run and firebase development, creating and managing cloud resources on the Google Cloud Platform.

## PROJECTS

**Passive BCI-based EEG Mental Attention State Classification** ***Feb 2021 - May 2021***
- Classified human mental attention state into focused, unfocused, and drowsy categories with a public electroencephalography (EEG) based BCI intrinsic activity data set for individuals under live simulation.
- Evaluated various classifiers including a hybrid neuro-genetic fuzzy system (GA-ANFIS) and both shallow convolutional (CNN) and convolutional recurrent neural networks (CRNN), working with multiple pre-processing techniques and sample trial lengths as short as 6 seconds for responsive predictions.

**Semi-automated 3D Semantic Segmentation Toolbox** ***Sep 2020 - May 2021***
- Developed a semi-automated annotation toolbox with 3D cross-sectional painting and interactive visualization to generate segmentation masks from TIFF stack image volumes with PyQt5, NumPy and TensorFlow.
- Integrated a UNET2D based network, initially trained on a data set of neuron morphology obtained from wide-field microscopy, with both local and server-based prediction modes within the toolbox to enable live segmentation.

**Investigating Misinformation Amid COVID-19** ***Jun 2020 - Mar 2021***

- Analyzed people's susceptibilities to misinformation and perceptions in the wake of the COVID-19 outbreak with a multidisciplinary team in collaboration with the University of Oxford, working under the Technology for People Initiative Lab, Lahore University of Management Sciences.
- Deployed a mixed-method approach after data collection through 100+ surveys and interviews, and both quantitative and qualitative analysis.

**LUMUN OMUN (Online MUN)** ***Jan 2021 - Jan 2021***

- Developed a web interface in React and Redux for the LUMUN society (LUMS) allowing the administration to efficiently manage committees and individual delegates for real-time online events.
- Set up a virtual auditorium, delegate chat, synchronized timer and other dynamic components connected via Socket.io.

**SafarNama: Gamified Educational Virtual Touring for Pakistan** ***Sep 2020 - Dec 2020***

- Created an educational AR-based virtual touring application to showcase the heritage and culture of Pakistan, using 3D exhibits, gamification and periodic quizzes to improve spatial, visual and story-based learning in children.
- Conducted user research through focus group discussions, 20+ interviews, surveys and both low and high-fidelity prototyping.

**Madadgaar** ***Jun 2020 - Aug 2020***

- Designed a complete blood donation system for donors to sign up and get notified about submitted blood requests from anonymous users and organizations alike. with integrated email, SMS and in-app notifications while maintaining complete donor privacy.
- Received the LUMS Students as Co-Researchers (ScR) Program 2020 Grant (50,000 PKR) from the Office of Research and LUMS Learning Institute.

**PianoTunesAR** ***Jul 2020 - Jul 2020***

- Designed an AR-based mobile application to calibrate and project digitally-recorded piano videos from YouTube over a physical piano for enhanced learning by direct natural mapping, increased spatial recognition and hand-eye coordination.
- Winning Team (1,000€) - Wallifornia MusicTech Hackathon 2020 conducted by Hackathons International.

**Save Our Soul** ***Jul 2020 - Jul 2020***

- Created an anonymous video and chat web application with React and NodeJS for people seeking mental help - anonymously connect with others seeking help or willing to provide help along with advanced reporting.
- Submitted to the COVID-19 Global Hackathon 2.0: Social & Mental Health and Quarantine Hacks 2020.

**Co-Curricular Activities Management System** ***Apr 2020 - May 2020***

- Built a web application for the Co-Curricular Activities Office at Lahore University of Management Sciences to enable efficient internal management and ease the handling of society events.
- Integrated a custom Task Manager, Form Maker/Viewer, Request Panel and Society Dashboard.

**AgriScan** ***Mar 2020 - Mar 2020***

- Designed web chat application using FastAI to allow farmers to predict the presence of the Tomato Yellow Leaf Curl Virus (TYLCV) in crops by conveniently sending the snapshot of a sample leaf, while also marking all live diseased locations.
- Winning Team - IEEE LUMS CodinGuru Hackathon 2020 hosted by Facebook Developer Circles Lahore.