ADEER KHAN

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Education

CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY (CUST) Islamabad, Pakistan

B.Sc. Civil Engineering **CGPA: 3.88/4.0 (2nd in Batch)** Sep 2018 - Jul 2022

ROOTS INTERNATIONAL SCHOOLS Islamabad, Pakistan

IGCSE AND A-LEVELS with 7 A's Aug 2014 - Aug 2018

Research Interest

Motivated towards the implementation of computer vision and Ai in remote sensing and 3d model generation for intelligent infrastructure and urban management.

Research Experience

Journal Article In Undergraduate: Machine learning-based monitoring and modeling for Spatio-temporal urban growth of Islamabad Jul 2021 - Feb 2022

- Studied Spatio-temporal land use/ land cover (LULC) monitoring (1991–2021) and urban growth prediction (2021–2041) of Islamabad, Pakistan to deduce the changes in various LULC classes in the past and the future by incorporating realistic influential thematic layers and Artificial Neural Network-Cellular Automata (ANN-CA) machine learning algorithms.
- Model validation by Kappa statistics, confusion (error) matrix, spatial similarity, and RMSE error were done to approve the accuracy of the model.
- Visual urban sprawl assessment on LULC maps was done to highlight the type of sprawls.
- The study necessitated better monitoring and better planning of urbanization by enforcing policies and necessary measures.

Undergraduate Thesis: A simple and sustainable approach to structural health monitoring of structures - Final Year Project Sep 2021 - Jul 2022

- Worked at Civil Engineering Materials Lab on a steel structure prototype mounted on a locally made shake table to assess structural response through an Arduino MEGA 2560 microcontroller programmed in C++/MATLAB Simulink with ADXL 345 accelerometers to achieve a simple approach for structural health monitoring.
- Led the project as a group leader overseeing literature review, methodological approach, experimental setup, and results and analysis.
- Distinction as 1st Position in displaying the project at the university's 10th Industrial Open House.

Relevant Research Skills

- GIS data monitoring (ArcGIS), Remote Sensing (QGIS), and PyQGIS plugin development.

- Computer-Aided Design: AutoCAD, Sketchup, Blender, Unreal Engine.
- Programming: C++, Python, MATLAB, Machine & Deep Learning, OpenCV, OpenFOAM, GIT.
- Computer-Aided Modeling, Analysis, and Design using SAFE and ETABS.
- Building Information Modeling (BIM) using Autodesk Revit & Rhino Grasshopper.
- Geotechnical Finite Element Analysis using OpenSees, PLAXIS 3D and Slide 3.
- Presentation: Paraview, Adobe Illustrator and Photoshop, Microsoft Office.
- Interpersonal: Articulate Communication, Teamwork, Project Management, Multi-tasking.

Teaching Experience

Volunteer, The NGO World Foundation Jun 2019 - Jul 2019

- Raising awareness about youth volunteering opportunities across schools.
- Attended multiple workshops on Reporting and Documenting Volunteer Activities.

Substitute Teacher, Teach for Pakistan School Dec 2020 - Jan 2021

- Delivered a workshop on Social Uplift through Popular Education Pedagogy.
- Substitute teacher of junior classes.

Honors and Awards

Participant of South Asian Quiz Content CMC Quiz Mania - 5 held in Kathmandu, Nepal

- Represented Pakistan in Quiz Mania which was telecasted on Nepal Tv.

Awarded Quaid-e-Azam Gold Medal

- An overall best achiever of the university based on extra and co-curricular activites.

National Level Distinction in Final Year Design Project

- Awarded 2nd prize at Pakistan Engineering Council's Engineering Capstone Expo 2022.

Research Excellence Award 2021

- Based on excellent research achievement at such a young age, was designated as the chair of the Research Excellence Award Ceremony (REA) - 2021.

Organizer of the 16th International Conference on Emerging Technologies (ICET 2021)

- Supervised a team to professionally undertake the graphical work of the conference.

Organizer of the International Conference on Advances in Mechanical Engineering

- Proofing reading and structuring the conference proceedings.

University Level Distinction in Final Year Design Project

- Awarded 1st Position at the 10th Industrial Open House held by the university.

Runner Up at SUPARCO World Space Week 2022 Pakistan

- Secured 2nd position in SDG Video Contest on Sustainable Human Footprint.

Chancellor's Honor Roll

- Awarded two times for securing a 4.0 GPA in two semesters of the Engineering Degree.

Dean's Honor Roll

- Awarded six times for securing a GPA above 3.5 in six semesters of the Engineering Degree.

FYP Project Displayed at Rawalpindi Chamber Of Commerce And Industry Expo 2022

- The Project was presented to entrepreneurs, ambassadors, and industry professionals.

Additional Relevant Experience

Asset Integrity Engineer, Softoo (collabration with Abyss Solutions) Mar 2023 – Present

- Conducted remote assessments of offshore and marine oil rigs using Lidar and Photogrammetry technologies to identify areas for improvement and ensure compliance with regulatory standards.
- Worked with cross-functional teams, including project managers, engineers, and data analysts, to coordinate asset integrity assessments and develop effective solutions to complex problems.

Graphics Head, IEEE CUST Student Branch Jan 2019 - Aug 2022

- Led a team of graphic designers to manage IEEE Social Media and other graphical works.
- Organized over 40 webinars in semesters in coordination with other societies.
- Organized mega-events such as Al-Funoon Gala and ICSEC.

Intern, GRENCon Pvt Ltd. Jun 2021 - Aug 2021

- Quantity estimation of SHELL pumps underground wiring project in the Potohar region.
- Assistance to Quality Control Engineer on site and Structural Engineer in design vetting.
- The interior design of a hotel using Sketchup3d and Revit.

Publications

- Khan, A. & Ali, M. (2023). Consideration of simple approaches for structural health monitoring of structures in developing countries - An overview. Sustainable Structures and Materials, An International Journal, 6(1), 139-143.
- Khan, A., & Sudheer, M. (2022). Machine learning-based monitoring and modeling for spatio-temporal urban growth of Islamabad. The Egyptian Journal Of Remote Sensing And Space Science (Elsevier), 25(2), 541-550, (IF = 6.393).
- Final Year Project Thesis, "A Simple and Sustainable Approach for Structural Health Monitoring of Structures", 2022, Department of Civil Engineering, CUST, Islamabad.

Additional Skills & Courses

- Machine Learning Specialization, Stanford

  Supervised Machine Learning-Regression and Classification

  Introduction to Fundamental Machine Learning concepts – Regression and Classification: linear and logistic regression – Gradient Descent – NumPy – Matplotlib – Scikit-learn

  Advanced Learning Algorithms

  Neural Networks – Tensorflow – Bias, Variance, and Error Analysis – Opitimization – Decision Trees Ensembles – XGBoost

Unsupervised Learning, Recommenders, Reinforcement Learning
K-means Clustering – Anomaly Detection – Collaborative Filtering – Content-Based Filtering – Reinforcement Learning – Algorithm refinement

- Introduction to Computer Vision and Image Processing from Coursera by IBM.
- Imagery, Automation, and Applications from Courera by UC, Davis.
- Introduction to Deep Learning & Neural Networks with Keras from Coursera by IBM.
- Neural Networks and Deep Learning from Coursera by Stanford Online.
- How to Write and Publish a Scientific Paper from Coursera by École Polytechnique.
- Introduction to Programming with MATLAB from Coursera by Vanderbilt University.
- Revit for Architectural Design Exam Prep from Coursera by Autodesk.
- Introduction to Business Management from FutureLearn by King's College London.
- Two-day Revit Architectural Fundamentals Workshop.

Membership in Professional Societies

- Student Member, Institute of Electrical and Electronics Engineers (IEEE).
- Affiliate Member, American Society of Civil Engineers (ASCE).
- Student Member, American Society for Testing and Materials (ASTM) International.

References

Imtiaz Ahmad Taj, Professor and Dean Faculty of Engineering
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