DR. ASIF RAJPUT

engineer.asifali@gmail.com | rajputasif.github.io | rajputasif | 0000-0002-0157-129X

PROFESSIONAL PROFILE

A detailed-oriented and self-motivated Computer Vision Engineer with 9+ years of experience spanning from traditional to deep learning based systems. Always looking out and planning to employ *state-of-the-art* research into development.

EXPERIENCE AND RESEARCH

Senior AI Engineer & Development Manager (Remote) | Kodifly Limited

March 2023 – Ongoing | Islamabad, PK

- Developed and deployed an end-to-end ML pipeline into production which fuses LiDAR and video data for optimized detection combined with AI software which generates actionable insights for infrastructure maintenance.
- Responsible of complete data pipeline from collection to model training and deployment.
- Manage a diverse team consisting of back-end, front-end and AI engineers to facilitate sprint based agile development.

Tools used: OpenCV, OpenPCDet, Yolov8, Pytorch, GIT and JIRA

Senior Researcher Robotics | CRAIB-SIBA

June 2020 – October 2022 | Sukkur, PK

- Developed and **patented** (pending) a device to automate the digitization process of handwritten documents, forms using CV and Deep learning.
- Led CRAIB's robotics cluster to develop a deep learning based surveillance system for vehicle detection, tracking, speed analytics, management and so much more.

Tools used: OpenCV, Yolov5, DeepSORT and GIT

Assistant Professor and CV Researcher | NUST-SEECS

Feb 2019 – May 2020 | Islamabad, PK

- Supervision and mentor ship of students/researchers to expand the frontiers of CV/ML research such as Multi-Sensor fusion, 3D detection and segmentation.

PhD Researcher | German Aerospace Center (DLR) Berlin

Oct 2014 – Sep 2018 | Berlin, DE

- Design and Implementation of a generalized novel 3D reconstruction framework capable of handling various sensor devices (such as RGBD cameras, LiDAR and StereoVision).
- Developed and **patented** a decentralized system with tailor-made protocol to facilitate remote visualization of 3D reconstruction.

Tools used: OpenCV, ORB-SLAMv2, OpenGL and GIT

Lecturer Computer Science | SIBA University

Feb 2012 – Jun 2014 | Sukkur, PK

EDUCATION

PhD in Electrical Engineering | Technical University Berlin

Oct 2014 – Sep 2018 | Berlin, DE

Major: Computer Vision and 3D Reconstruction

M.Sc in Computer Engineering | NUST University

2009 – 2011 | Islamabad, PK

Major: Digital Image Processing

B.S. in Computer Systems Engg. | QUEST University

2004 – 2009 | Nawabshah, PK

Major: Embedded Systems and Robotics

TECHNOLOGIES

OpenCV | 3D Reconstruction | SLAM | Git | Docker | JIRA

CODING SKILLS

- C++
- Python

LANGUAGES

- English
- German

PUBLICATIONS

Patents

- A. Rajput and G. Mujtaba, "Device and method for recognizing handwritten text and characters from documents (submitted)," 2022.
- A. Rajput and A. Boerner, "Method and arrangement for selecting a color model conversion for an image compression (wo2020160991), in german and u.s. patent office," 2018.

Journal Articles

- R. Hassan, M. Fraz, A. Rajput, and M. Shahzad, "Residual learning with annularly convolutional neural networks for classification and segmentation of 3d point clouds," *Neurocomputing*, 2023.
- S. Hassan, G. Mujtaba, A. Rajput, and N. Fatima, "Multi-object tracking: A systematic literature review," *Multimedia Tools and Applications*, Oct. 2023, ISSN: 1573-7721. DOI: 10.1007/s11042-023-17297-3.
- F. Qureshi, A. Rajput, G. Mujtaba, and N. Fatima, "A novel offline handwritten text recognition technique to convert ruled-line text into digital text through deep neural networks," *Multimedia Tools and Applications*, pp. 1–27, 2022.
- A. Rajput, J. Li, F. Akhtar, *et al.*, "A content awareness module for predictive lossless image compression to achieve high throughput data sharing over the network storage," *International Journal of Distributed Sensor Networks*, vol. 18, no. 3, p. 15 501 329 221 083 168, 2022.
- M. Atif, Z. Khand, S. Khan, F. Akhtar, and A. Rajput, "Storage optimization using adaptive thresholding motion detection," *Engineering, Technology & Applied Science Research*, vol. 11, no. 2, pp. 6869–6872, 2021.
- A. Hussain, F. Akhtar, Z. H. Khand, A. Rajput, and Z. Shaukat, "Complexity and limitations of gnss signal reception in highly obstructed enviroments," *Engineering, Technology & Applied Science Research*, vol. 11, no. 2, pp. 6864–6868, 2021.
- M. H. Mughal, Z. A. Shaikh, Z. H. Khand, A. Rajput, and F. Akhtar, "A systematic review of ontology-based river streamflow and flood data management challenges," *Quaid-E-Awam University Research Journal of Engineering, Science & Technology, Nawabshah.*, vol. 19, no. 1, pp. 40–50, 2021.
- F. Akhtar, J. Li, Y. Pei, *et al.*, "Diagnosis of large-for-gestational-age infants using a semi-supervised feature learned from expert and data," *Multimedia Tools and Applications*, vol. 79, no. 45, pp. 34 047–34 077, 2020.
- A. Hussain, G. Ali, F. Akhtar, Z. H. Khand, and A. Ali, "Design and analysis of news category predictor," *Engineering, Technology & Applied Science Research*, vol. 10, no. 5, pp. 6380–6385, 2020.
- A. Rajput, A. Hussain, F. Akhtar, Z. H. Khand, and H. Magsi, "A versatile decentralized 3d volumetric fusion for on-line reconstruction," *Engineering, Technology & Applied Science Research*, vol. 10, no. 6, pp. 6584–6588, 2020.
- F. Akhtar, J. Li, Y. Pei, *et al.*, "Diagnosis and prediction of large-for-gestational-age fetus using the stacked generalization method," *Applied Sciences*, vol. 9, no. 20, p. 4317, 2019.
- M. K. Ali, A. Rajput, M. Shahzad, F. Khan, F. Akhtar, and A. Boerner, "Multi-sensor depth fusion framework for real-time 3d reconstruction," *IEEE Access*, vol. 7, pp. 136 471–136 480, 2019. DOI: 10.1109/access.2019.2942375.
- A. Rajput, E. Funk, A. Börner, and O. Hellwich, "A regularized volumetric fusion framework for large-scale 3d reconstruction," *ISPRS Journal of Photogrammetry and Remote Sensing*, vol. 141, pp. 124–136, 2018.

Conference Proceedings

- F. Akhtar, J. Li, Y. Pei, Y. Xu, A. Rajput, and Q. Wang, "Optimal features subset selection for large for gestational age classification using gridsearch based recursive feature elimination with cross-validation scheme," in *International Conference on Frontier Computing*, Springer, 2019, pp. 63–71.
- A. Rajput, E. Funk, A. Börner, and O. Hellwich, "Boundless reconstruction using regularized 3d fusion," in *International Conference on E-Business and Telecommunications*, Springer, 2016, pp. 359–378.
- M. A. A. Rajput, E. Funk, A. Börner, and O. Hellwich, "Recursive total variation filtering based 3d fusion.," in *SIGMAP*, 2016, pp. 72–80.
- M. A. Ali, A. Khan, M. Y. Javed, and A. Khanum, "Lossless image compression using kernel based global structure transform (gst)," in *2010 6th International Conference on Emerging Technologies (ICET)*, IEEE, 2010, pp. 170–174.