Shahid Shabeer Malik

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EDUCATION

Saint Louis University, Saint Louis, Missouri, United States of America
Ph.D. Computer Science (September 2023- Present)

Jamia Hamdard University, New Delhi, India
B.Tech. Computer Science and Engineering (August 2020- July 2023) 8.3 CGPA (Among top 3 of the section)

Jamia Millia Islamia University, New Delhi, India 81.2% (Among top 10 of the Class)
Diploma in Computer Engineering (August 2017- May 2020)

Paradise High School Kohru, Langate, Jammu & Kashmir, India 96% (Among top 10 in the district, topper of the school)
High School (2016)

WORK EXPERIENCE

Department of Computer Science, Saint Louis University
Research Assistant in SLUAIR Lab ***May.2023- Present***

- I have been working extensively in 3D Computer Vision, particularly on event cameras and their applications in space environments and Wide Area Motion Imagery (WAMI). I have been leading several projects where my research has involved using Structure from Motion (SfM) techniques to estimate satellite poses using data from event cameras (SEENIC Dataset), alongside Multi-View Stereo (MVS) and Gaussian Splatting for 3D dense reconstruction. Our work demonstrates the advantages of event cameras in space environments with challenging lighting conditions, and we have explored the critical role that different feature extraction algorithms play in the SfM process for satellite images obtained through various event-to-frame reconstruction algorithms such as E2VID, FireNet, ETNet, and HyperE2VID. This research is currently in preparation for publication.
- In addition to this, I have been simulating event cameras and other sensors in Unreal Engine across different scenarios, and more recently, I have been working with ROS to capture real event data using the DOOSAN robotic arm and the EVK 4 HD camera and other sensors.

Department of Computer Science, Saint Louis University
Teaching Assistant for Deep Learning and Applied Machine Learning ***Sept.2023- May 2024***

- I served as a teaching assistant for a Deep Learning course, where I guided students in troubleshooting their convolutional neural networks (CNNs) and taught them fundamental deep learning concepts. Additionally, I assisted my professor in designing assignments and grading student work.
- In the Applied Machine Learning course, I provided support to students by troubleshooting their code and teaching key concepts such as regression, classification, and clustering.

Indian Institute of Information Technology Nagpur, Maharashtra, India
Summer Undergraduate Research Intern ***June, 2022- August, 2022***

- Research intern under the guidance of Dr. Jitendra V. Tembhurne, Head of the Department & Assistant Professor of the Department of Computer Science and Engineering, Indian Institute of Information Technology, Nagpur.
- Performed critical analysis of different skin cancer detection models like ABCD algorithm, Federated Machine Learning approach and different Convolutional Neural Networks like InceptionV3 and ResNet50, AlexNet on datasets like ISIC 2020, PH2, and HAM10000.
- Performed skin lesion segmentation using Otsu thresholding, active contour and K-means clustering algorithm on PH2 dataset.
- Concluded that Otsu's method outperformed the other two techniques in terms of Intersection over Union and F1 score of **0.802961371** and **0.884495534** respectively**.**

Evision Technoserve Pvt. Ltd (Noida India)
Summer Intern ***(12 July, 2019- 27 August, 2019)***

Summer Internship Intern in Amazon Web Services Cloud Technology Training from Evision Technoserve Pvt. Ltd.

- Learned concept of AWS cloud, cloud storage, types of cloud services, deployment models, AWS products, AWS management console.
- Deployed websites using AWS and used Auto Scaling and Load Balancer.

PUBLICATIONS

- S.S. Malik, A. Khan, Dr. Sapna Jain, "Roomate4U- An online platform that provides accommodation facilities to college students".
  I presented this research paper in the International Conference on ICT for sustainable development in Goa, India. published in the book series "ICT Systems and Sustainability" of Springer Nature.

- Shahid Shabeer Malik, "Skin Lesion Segmentation using Active Contour, Otsu's Thresholding and K-Means Clustering: A comparative Analysis" (Conditionally accepted for publication in IEEE Xplore).
- Shahid Shabeer Malik, Aneeque Khan, "Anxiety, Depression and Stress prediction among college students using Machine Learning Algorithms" (Published at IEEE Xplore).

PROJECTS

Satellite Pose Estimation using event camera **(*present)***

- I have been deeply involved in research on event cameras, particularly their applications in space environments and Wide Area Motion Imagery (WAMI). Leading several projects, I have focused on using Structure from Motion (SfM) techniques to estimate satellite poses from event camera data, in conjunction with Multi-View Stereo (MVS) and Gaussian Splatting for 3D dense reconstruction. Our research highlights the benefits of event cameras in space environments with challenging lighting conditions and examines the crucial role of various feature extraction algorithms in the SfM process for satellite images derived from event-to-frame reconstruction algorithms like E2VID, FireNet, ETNet, and HyperE2VID.

Flower petal count prediction using different pretrained CNNS like ResNet 50, VGGNet, etc. ***(Sep. 2023 – Nov 2023)***

- I worked in the Computer Vision lab under the direction of Prof. Abby Stylianou on a project focused on counting the petals of flowers from raw images captured by an iPhone. I employed multiple pretrained CNNs to perform regression on the provided dataset, which included images and annotations of petal tip pixel locations. The models utilized basic CNN architectures with ReLU and Linear activations in the last two dense layers. ResNet50 yielded the best result.

Roomate4U ***(November 2021)***

- Founded Roomate4U, an online platform that acts as an interface between room owners and college students and provides accommodation services to students.
- Designed and developed this platform, after observing that students were facing a lot of problems while searching for rooms and roommates.
- Created using HTML5, CSS3, Java Script, Bootstrap, jQuery, Media- query, Ajax, PHP, and SQL.
- It provides services to hundreds of students of two universities: Jamia Millia Islamia and Jamia Hamdard University and has solved the problems of students by a great percentage.

LANGUAGES & TECHNOLOGIES

ROS, PyTorch, C++, Python, Java, OpenCv, TensorFlow, Keras, Linux, Docker C, HTML5, CSS3, PHP, JavaScript, SQL, jQuery, CV2, Bootstrap3, MATLAB, UNREAL Engine,.

AWARDS AND CERTIFICATES

- Recipient of fully funded scholarship award from Saint Louis University.
- Certificate of Presentation at the 7th International Conference on ICT for Sustainable Development.
- Best Project Award during Diploma in Computer Engineering.