Shabbir Marzban
Research Engineer — Computer Vision, Machine Learning and Deep Learning.

CONTACT INFORMATION

Pleintjes 159,
Veldhoven 5501 EG,
The Netherlands.

Phone: (+31) 685343018
E-mail: shabbir.marzban@outlook.com
LinkedIn: linkedin.com/in/smarzban

SUMMARY

A **Computer Vision, Machine Learning and Deep Learning** expert with a solid grounding in bachelor's and master's programs. 7+ years of experience in researching and developing solutions. My day to day activities include designing algorithms from scratch, implementing state of the art research and optimizing code for deployment.

EDUCATION

Koç University, Graduate School of Science and Engineering   2013 - 2015
Istanbul, Turkey

> MS Computer Science,
> Key Research: Computer Vision, Machine Learning and Intelligent User Interfaces

Lahore University of Management Sciences (LUMS)   2008 - 2012
Lahore, Pakistan

> BS Electrical Engineering,
> Key Research: Computer Vision and Embedded Systems

PROFESSIONAL EXPERIENCES

Machine Learning Researcher, Promaton (promaton.com)   June, 2021 - Present

- Part of prosthetics team which aims to revolutionize the field of dentistry using AI.

Research Engineer, Navinfo Europe (navinfo.eu)   Jan, 2019 - May, 2021

- Researched and developed a semantic segmentation network called RGPNet for street-level images along with a training technique that consumes 75% less energy. Published in WACV2021. Arxiv: https://arxiv.org/abs/1912.01394. Video: https://youtu.be/v3z3uzoeWA0.
- Researched on object detection and segmentation modules and on deploying the models on limited compute resources.
- Researched and developed a data completion pipeline that enables training of a unified segmentation model on varied datasets with mutually exclusive classes annotated.
- Researched and developed methods to detect wear on the road markings by processing collected dashcam videos. Arxiv: https://arxiv.org/abs/2106.02567

Computer Vision Engineer, Uru (acquired by Adobe)   Jan, 2017 - May, 2018

- Researched and developed CV/DL algorithms that can understand scene and detect objects in a video in order to perform brand analytics and compute brand safeness scores.
- Researched, developed and deployed detector for 800+ unique brands (eg. Cocacola, Nike, etc.). Medium blog post: http://bit.ly/2QmCgHK
- Researched and developed deep learning models to extract geometry from the predicted depth of single images and use them for accurate 3D augmentations.
- Researched on detecting specific types of scene-changes such as fade-in, fade-outs and scene-fades; designed and deployed a data-driven approach.
- Co-inventor on two patents owned by Adobe.

Research Engineer (Computer Vision), Ingrain (ingrain.io)   Oct, 2015 - Dec, 2016

- Researched and built a prototype for mobile Augmented Reality tracking technology that goes beyond Pokemon GO.
- Developed modules for automatic advert placements in videos. My responsibilities include prototyping algorithms in Matlab and porting it to C++ (OpenCV) for release.
- Improved and optimized tracking technology in non-static videos (involving change in pose and translation).
- Managed and trained a team of recent graduates.

Research Assistant, Intelligent User Interfaces Lab (IUI)   Sept, 2013 - Aug, 2015

and Multimedia, Vision and Graphics Lab (MVGL),
Koç University (iui.ku.edu.tr/people)

- Researched on recognition, detection, and synthesis of affective events in speech and gestures (facial emotions and upper body movements).
- Implemented a system that automatically detects and recognizes affect bursts, such as laughter, inhale and exhale, etc., from multi-modal input feed (sound and RGB-D streams).

Computer Vision Consultant, 3D Systems Integrators July, 2013 - Sept, 2013

- This is part-time freelance work. Implemented and tested routines of a pipeline for 3D reconstruction of stationary structures from arbitrary images.

Research Assistant, Computer Vision Lab, Sept, 2011 - July, 2013
Lahore University of Management Sciences (cvlab.lums.edu.pk)

- Researched a new approach in recovering 3D from multiple camera feeds. The proposed approach was published in ICCV which is a top tier conference in computer vision.
- Researched on developing automatic 3D structure recovery of heritage sites in Lahore, Pakistan, from aerial images and videos.
- Conducted tutorials and supervised course projects on the recovery of the non-rigid structures.

PATENTS AND
PUBLICATIONS

Elahe Arani*, **Shabbir Marzban***, Andrei Pata, and Bahram Zonooz. **RGPNet: A Real-Time General Purpose Semantic Segmentation.** In IEEE Winter Conference on Applications of Computer Vision (WACV), 2021.

Shabbir Marzban, Brunno Fidel Maciel Attorre, and Nicolas Huynh Thien. **Realistic augmentation of images and videos with graphics.** US Patent 10,726,599, published on July 28, 2020.

Brunno Fidel Maciel Attorre, Xiaozhen Xue, **Shabbir Marzban**, Nicolas Huynh Thien, and William L. Marino. **Apparatus, systems, and methods for integrating digital media content.** US Patent 10,522,186, published on December 31, 2019.

Shabbir Marzban, Bekir Berker Turker, Engin Erzin, Yucel Yemez, and Tevfik Metin Sezgin. **Affect burst detection using multi-modal cues.** In Signal Processing and Communications Applications Conference (SIU), IEEE, 2015.

Aamer Zaheer, Ijaz Akhter, Mohammad Haris Baig, **Shabbir Marzban**, and Sohaib Khan. **Multiview structure from motion in trajectory space**. In Computer Vision (ICCV), IEEE International Conference, pp. 2447-2453. IEEE, 2011.

HONORS AND
AWARDS

- Full Scholarship for Master's Degree funded by The Scientific and Technological Research Council of Turkey (TUBITAK)
- 1st position in Annual Computer Science Research Competition, LUMS, 2013
- Senior year thesis ranked top among all presented in Computer Science, LUMS, 2012
- Dean's Honour List, LUMS, 2009

TEACHING
ASSISTANT

Koç University
COMP 408/508: Computer Vision and Pattern Recognition (Sept 2014 - Jan 2015)
COMP 132: Advanced Programming (Jan 2014 - May 2014)
COMP 131: Introduction to Programming (Sept 2013 - Jan 2014)
Lahore University of Management Sciences
CS 436: Computer Vision Fundamentals (Aug 2012 -Dec 2012)

COMPUTER SKILLS **Languages/Tools:** Python, C++, Matlab, Java.
Libraries: C++: OpenCV, Pytorch, Tensorflow, TensorRT, PCL, Open3D, Cuda.
Python: Pytorch, Scipy, Scikit-learn, Scikit-image, OpenCV, Tensorflow, Keras, etc.