Muhammad Usman Ghani

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EDUCATION

BOSTON UNIVERSITY
PHD, Electrical Engineering
Expected 2020 | Boston, MA
CGPA: 3.82/4.00

SABANCI UNIVERSITY
MS, Computer Science
Aug 2016 | Istanbul, Turkey.
CGPA: 3.90 / 4.00

COMSATS INSTITUTE OF IT
BS, Electrical Engineering
Jan 2013 | Lahore, Pakistan.
CGPA: 3.74 / 4.00

SKILLS

MATLAB • Python • C/C++ • Tensorflow • OpenCV • Keras • LaTeX

INTERESTS

Machine Learning • Computational Imaging • Computer Vision • Biomedical Image Processing • Statistical Signal Processing • Data Mining

HONORS

Distinguished Electrical Engg. Fellowship.
ERASMUS+ Internship Mobility Grant.
Research Excellence Award.
Institute Gold Medal.

TEACHING

Signals and Systems.
Probability Theory.
Decision Analysis.

COURSES

Deep Learning • Computational Optical Imaging • Learning from Data • Image & Video Computing• Detection & Estimation Theory • Random Processes • Computer Vision • Data Mining • Engineering Optimization • Digital Signal Processing • Control Systems.

RESEARCH

BOSTON UNIVERSITY | Research Assistant
Sep 2016 – Present| Boston, MA

- Learning based algorithms to improve CT image reconstruction.

SABANCI UNIVERSITY | Research Assistant
Sep 2014 – Sep 2016| Istanbul, Turkey

- Dendritic Spine Shape Analysis based on Two-Photon Microscopy Images.
- This project focused on developing new probabilistic and machine-learning based image processing algorithms for the dendritic spine analysis from two-photon microscopy images.

CHAMPALIMAUD FOUNDATION | Research Intern
Summer 2015| Lisbon, Portugal

- SpineS: A tool for automatic dendritic spine detection and analysis.

UNIVERSITY OF ENGINEERING & TECHNOLOGY | Associate Research Officer
Mar 2013 - Aug 2014 | Lahore, Pakistan

- UrduOCR: Urdu Nastalique Optical Character Recognition System.
- UrduOCR is a system aimed to convert Urdu Nastalique document images into editable form, making use of Image Processing, Machine Learning and Natural Language Processing algorithms.

COMSATS INSTITUTE OF IT | Research Assistant
Jan 2012 - Jan 2013 | Lahore, Pakistan

- GazePointer: A Real Time Mouse Pointer Control Implementation Based on Eye Gaze Tracking.
- GazePointer is a Human-Computer Interaction application developed using Computer Vision algorithms for eye-gaze based interaction.

SHORT PROJECTS

- Deep Learning for Inverse Problems.
- Transfer Learning with Convolutional Neural Networks for Image Classification.
- Image Reconstruction from Human Brain Activity.
- CT Image Reconstruction using Learned Sparsifying Transform.
- PlantCLEF: Machine-Learning based Isolated Leaf Recognition.

PUBLICATIONS

- Dendritic spine classification using shape and appearance features based on two-photon microscopy, Journal of Neuroscience Methods.
- Nonparametric joint shape and feature priors for image segmentation, IEEE Transactions on Image Processing .
- Dendritic Spine Shape Analysis: A Clustering Perspective, European Conference on Computer Vision Workshops.
- GazePointer: Computer Vision Based Eye Gaze Tracking for Human-Computer Interaction, IEEE-HKN The Bridge.