



## Umair Haroon

**Nationality:** Pakistani **Date of birth:** 11 Jan 1995 **Gender:** Male

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Barcelona (Spain)

### ABOUT ME

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I am a Predoctoral scholar at the Mathematics and Computer Sciences Department of the University of Barcelona specializing in computer vision and deep learning. Moreover, I completed my Master's Degree in Software Convergence from Sejong University, Seoul, South Korea. I have achieved an expert level of conceptual and implementation skills in Deep Learning for various computer vision applications. Apart from my Master's research, I designed different kinds of Machine Learning and Deep Learning models including 2D-CNNs, 3D-CNNs, autoencoders, LSTM and its variants, and GRU for action, interaction and activity recognition, object detection, Anomaly detection, image retrieval applications, surveillance video summarization, and electricity energy consumption prediction data. Currently, I am working on Food and Nutrition data for Neural Radiance Field (NeRF), 3D Reconstruction, and Food Volume Estimation applications.

### EDUCATION AND TRAINING

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#### PhD in Computer Science

**University of Barcelona** [ Oct 2022 – Current ]

Address: 08007 Barcelona (Spain)

Website: <https://web.ub.edu/web/ub/>

#### Master's in Software Convergence

**Sejong University** [ Mar 2020 – Feb 2022 ]

Address: 05006 Seoul (South Korea)

Website: <https://eng.sejong.ac.kr/index.do>

Final grade: 4.33/4.5

Thesis: A Study of Human Interaction Recognition based on Dual-Stream Sequence Learning Framework

#### Bachelor's in Computer Science

**Islamia College Peshawar** [ 14 Sep 2014 – 9 Aug 2018 ]

Address: 25120 Peshawar (Pakistan)

Website: <https://icp.edu.pk>

Final grade: 3.53/4.0

Thesis: Raspberry Pi Based Real-Time Hand-Gestures Recognition Using Flex Sensors

### WORK EXPERIENCE

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#### Pre-Doctoral Researcher

**CVUB Lab, Department of Mathematics and Computer Science, University of Barcelona** [ 27 Sep 2022 – Current ]

City: Barcelona

Country: Spain

Working on Food and Nutrition data for Neural Radiance Field (NeRF), 3D Reconstruction, and Food Volume Estimation applications.

## Research Assistant

*Intelligent Media Lab, Department of Digital Contents, Sejong University* [ Mar 2020 – Feb 2022 ]

City: Seoul

Country: South Korea

Deep learning models implementation and analysis such as CNNs, RNNs, LSTM, GRU for different computer vision related projects including action, interaction and activity recognition, video summarization, violence and anomaly detection, and object detection.

## Research Assistant

*Digital Image Processing Lab, Department of Computer Science, Islamia College Peshawar* [ Apr 2017 – Feb 2020 ]

City: Peshawar

Country: Pakistan

Mainly worked on IoT devices such as; Raspberry Pi, and Arduino, with multiple sensors, multiple image processing, machine learning and deep learning techniques.

## Customer service representative

*Fends Consultant* [ 18 May 2014 – 5 Aug 2015 ]

City: Peshawar

Country: Pakistan

## PUBLICATIONS

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### [Deep Learning Assists Surveillance Experts: Toward Video Data Prioritization](#)

[2022]

IEEE Transactions on Industrial Informatics

### [Intelligent Dual Stream CNN and Echo State Network for Anomaly Detection](#)

[2022]

Knowledge-Based Systems

### [A Multi-Stream Sequence Learning Framework for Human Interaction Recognition](#)

[2022]

IEEE Transaction on Human-Machine Systems

### [A Comparative Analysis of Efficient CNN-Based Brain Tumor Classification Models](#)

[2021]

Generalization with Deep Learning, pp. 259-278 (2021)

### **Human Interaction Recognition through Skeleton Key-points Estimation**

[2020]

The 6th International Conference on Next Generation Computing 2020

### **Raspberry Pi Based Real-Time Hand-Gesture Recognition Using Flex Sensors.**

[2018]

The 4th International Conference on Next Generation Computing 2018

## HONOURS AND AWARDS

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### FI-SDUR Pre-Doctoral Scholarship

University of Barcelona for PhD Degree [ 2022 ]

### 100% Study Scholarship

Sejong University for Master's Degree [ 2020 ]

## PROJECTS

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### Multi-view Video Data Analysis Technology for Smart City based Intelligent Surveillance System.

Korea Research Foundation (KRF)

#### Participating Researcher

### Development of AI-Convergence Technologies for Smart City Industry Productivity Innovation

Korea Institute for Advancement of Technology

#### Participating Researcher

### Personalized Video Contents Summarization Technology

Korea Research Foundation Supported Project

#### Participating Researcher

### Real-Time Hand-Gestures Recognition for Hearing Impaired Individuals Using Raspberry Pi and Flex Sensors

Small-scale research project.

#### Participating Developer

### Smart Home Automation System

Small-scale research project.

#### Participating Developer

## LANGUAGE SKILLS

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### Other language(s):

#### English

LISTENING C2 READING C2 WRITING C1

SPOKEN PRODUCTION C2 SPOKEN INTERACTION C2

## DIGITAL SKILLS

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COMPUTER VISION / DEEP LEARNING / MACHINE LEARNING / IMAGE PROCESSING / Tensorflow, Keras, Pytorch, Numpy, Matplotlib, scikit-learn

## RECOMMENDATIONS

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### PhD Supervisor

Name: Prof. Petia Ivanova Radeva

Email: [petia.ivanova@ub.edu](mailto:petia.ivanova@ub.edu)

Petia Radeva is a Full Professor at the Department of Mathematics and Computer Science, University of Barcelona, Barcelona, Spain

### PhD Co-Supervisor

Name: Prof. Ricardo Marques

Email: [ricardo.marques@ub.edu](mailto:ricardo.marques@ub.edu)

Ricardo Marques is a Lecturer at the Department of Mathematics and Computer Science, University of Barcelona, Barcelona, Spain

### **Masters Supervisor**

**Name:** Prof. Sung Wook Baik

**Email:** [sbaik@sejong.ac.kr](mailto:sbaik@sejong.ac.kr)

Sung Wook Baik is full Professor and head of Intelligent Media Laboratory, Department of Software, Sejong University, Seoul, South Korea.

### **Masters Co-Supervisor**

**Name:** Prof. Khan Muhammad

**Email:** [khan@sejong.ac.kr](mailto:khan@sejong.ac.kr)

Khan Muhammad is Assistant Professor at the Department of Software, Sejong University, Seoul, South Korea.

### **Academic Advisor**

**Name:** Prof. Muhammad Sajjad

**Email:** [muhammad.sajjad@icp.edu.pk](mailto:muhammad.sajjad@icp.edu.pk)

Muhammad Sajjad is an Associate Professor at the Department of Computer Science, Islamia College Peshawar, Pakistan.