Umair Iqbal (PhD) |

B512, 11 Northfields Avenue, Wollongong – NSW, Australia

✆ 0413887704 ● ✉ umair@uow.edu.au

Employment History

Research Fellow – IoT Engineer

at The SMART Infrastructure Facility   *January 2022–Present*
University of Wollongong (UOW),
Wollongong, Australia

○ Managing computer vision and machine learning related industrial projects.

○ Managing the NVIDIA DLI workshop series on deep learning and computer vision.

○ Coordinating Python courses for undergraduate and masters students.

Research Assistant/Teaching Assistant

at Department of Robotics and Artificial Intelligence (R& AI)   *April 2013–June 2014*
National University of Sciences and Technology (NUST),
Islamabad, Pakistan

○ Managed and organized the research related activities within advanced controls laboratory.

○ Conducted undergradute level labs and tutorials for control systems and automation subjects.

○ Part of the organization committee of International Conference on Robotics and Emerging Allied Technologies (iCREATE-2014).

Education

University of Wollongong	**Wollongong, Australia**
PhD (Computing and Information Technology)	*2018–2022*
National University of Sciences and Technology	**Islamabad, Pakistan**
MS(Robotics and Intelligent Machine Engineering), CGPA − 4.0	*2012–2015*
President Gold Medal	
Federal Urdu University of Arts Sciences and Technology	**Islamabad, Pakistan**
BSc Electrical (Electronics), CGPA − 3.89	*2007–2011*
Gold Medalist	
Federal Board of intermediate and Secondary Education	**Islamabad, Pakistan**
FSc (Pre-Engineering), Marks − 800/1100	*2005–2007*
First Division	
Sargodha Board of Intermediate and Secondary Education	**Sargodha, Pakistan**
Metric (Science), Marks − 557/850	*2003–2005*
First Division	

Computer skills

Advanced: TensorFlow, Keras, Scikit, Anaconda, PyTorch, Python, OpenCV, DeepStream, NVIDIA TAO, NVIDIA DALI, Microsoft Word, LaTeX

Intermediate: C++, Linux/Ubuntu, Microsoft Powerpoint, MATLAB, C#

Publications

Journal Articles

Umair Iqbal, Johan Barthelemy, Pascal Perez and Tim Davies. "Edge-Computing Video Analytics Solution for Automated Plastic-Bag Contamination Detection: A Case from Remondis". Sensors, 2022, 22(20), 7821. Online Link

Umair Iqbal, Muhammad Zain Bin Riaz, Johan Barthelemy and Pascal Perez. "Floodborne Objects Type Recognition Using Computer Vision to Mitigate Blockage Originated Floods". Water, 2022, 14(17), 2605. Online Link

Umair Iqbal, Johan Barthelemy and Pascal Perez. "Prediction of Hydraulic Blockage at Culverts from a Single Image using Deep Learning". Neural Computing and Applications, 2022. Online Link

Umair Iqbal, Muhammad Zain Bin Riaz, Johan Barthelemy and Pascal Perez. "Prediction of Hydraulic Blockage at Culverts using Lab Scale Simulated Hydraulic Data". Urban Water Journal, 2022, 19(7), 686-699. Online Link

Umair Iqbal, Johan Barthelemy, Wanqing Li and Pascal Perez. "Automating Visual Blockage Classification of Culverts with Deep Learning". Applied Sciences, 11(16), 7561, 2021. Online Link

Umair Iqbal, Pascal Perez and Johan Barthelemy "A Process-Driven and Need-Oriented Framework for Review of Technological Contributions to Disaster Management". Heliyon, e08405, 2021. Online Link

Umair Iqbal, Johan Barthelemy, Pascal Perez, Jason Cooper and Wanqing Li. "A Scaled Physical Model Study of Culvert Blockage Exploring Complex Relationships Between Influential Factors". Australasian Journal of Water Resources, pp 1-14, 2021. Online Link

Umair Iqbal, Pascal Perez, Wanqing Li and Johan Barthelemy. "How Computer Vision can Facilitate Flood Management: A Systematic Review". International Journal of Disaster Risk Reduction, Volume 53(102030), 2021. Online Link

Umair Iqbal and Syed Irtiza Ali Shah. "A Hollow Structure Elevated Skid Design for Medium Size Unmanned Disaster Surveying Helicopter", Journal of Space Technology, Volume 10(1), pp.75-83, 2021.

Umair Iqbal, Usman Rashid, Syed Irtiza Ali Shah, Mohsin Jamil and Yasar Ayaz. "Development of Long Range Radio Control System for an Unmanned Disaster Relief Helicopter", Science, Technology and Development (STD), Volume 36(2), pp.128-137, 2017. Online Link

Umair Iqbal, Muhammad Salman Sadiq, Aiman Rashid and Syed Irtiza Ali Shah. "Elevated Skid Design for an Unmanned Disaster Relief Helicopter", NUST Journal of Engineering Sciences (NJES), Volume 9, pp.8-12, 2016. Online Link

U. Iqbal, S. I. A. Shah, M. Jamil, S. O. Gillani, and Y. Ayaz. "Selection of Unmanned Aerial System (UAS) for Disaster Relief Operations: A Comparison", Journal of Science International, pp. 3199-3203, 2015. Online Link

Conference Papers

Muhammad Salman Sadiq, Umair Iqbal and Syed Irtiza Ali Shah. "Servo Actuated Payload Carry and Drop Mechanism for Unmanned Helicopters", In International Conference on Emerging Technologies (ICET), 18-19 October 2016, Islamabad, Pakistan. Online Link

Umair Iqbal, Muhammad Salman Sadiq and Syed Irtiza Ali Shah. "Design, Development and Fabrication of Airdrop Mechanism for First Aid Kit Drop in Unmanned Disaster Relief Helicopter", In 3rd International Conference on Engineering and Emerging Technologies (ICEET), 07-08 April 2016, Lahore, Pakistan. Online Link

Umair Iqbal, Syed Irtiza Ali Shah, Zia Ur Rehman and Mohsin Jamil. "Long Range Radio Modules for Model Unmanned Aerial Systems: A Short Comparison for Disaster Relief Applications", In 1st Multi Disciplinary Student Research Conference (MSDRC), 14-15 November 2015, Wah Cantt, Pakistan. Online Link

Umair Iqbal, Usman Rashid, Fazl-e-Umer, Zia-ur-Rehman and Syed Irtiza Ali Shah. "Endurance Analysis of Radio Controlled (RC) Unmanned Disaster Relief and Survey Helicopter", In 1st SMEP Applied Mechanical and Engineering Conference (AMEC-E), 14-16 November 2014, Lahore, Pakistan.

Umair Iqbal, Syed Irtiza Ali Shah, Fazl-e-Umer, Mohsin Jamil and Yasar Ayaz. "Development of Low Cost Radio Range Testing System for Unmanned Disaster Relief Helicopter", In 1st International Conference on Robotics and Emerging Allied Technologies in Engineering (ICREATE), 22-24 April 2014, Islamabad,Pakistan. Online Link

Fazl-e-Umer, Syed Irtiza Ali Shah and Umair Iqbal. "Design of Long Range Video and Telemetry Data Transmission System for an UAV Helicopter", In 1st SMEP Applied Mechanical and Engineering Conference (AMEC-E), 14-16 November 2014, Lahore, Pakistan.

Muhammad Faisal, Mohsin Jamil, Umair Iqbal, Muhammad Sami, Yasar Ayaz and Najeeb Ullah Khan. "Selection of Suitable Control Techniques for Payload Anti-Swing and Trolley Position Problems of 3DOF Crane", In 1st SMEP Applied Mechanical and Engineering Conference (AMEC-E), 14-16 November 2014, Lahore, Pakistan.

Saeed Iqbal, Umair Iqbal, Mubeen Umer Khan, Muhammad Saeed and Adeel Waqas. "Design, Fabrication and Analysis of Solar Parabolic Trough Collector for Steam Engine", In 1st International Conference on Robotics and Emerging Allied Technologies in Engineering (ICREATE), 22-24 April 2014, Islamabad, Pakistan. Online Link

Book Chapters

Umair Iqbal, Johan Barthelemy and Pascal Perez. "Chapter 15 - Emerging role of unmanned aerial vehicles (UAVs) for disaster management applications", In: Adil Denizli, Marcelo S. Alencar, Tuan Anh Nguyen, David E. Motaung (eds) Nanotechnology-Based Smart Remote Sensing Networks for Disaster Prevention, Elsevier, 2022 Online Link

Johan Barthelemy, Mehrdad Amirghasemi, Bilal Arshad, Cormac Fay, Hugh Forehead, Nathanael

Hutchison, Umair Iqbal, Yan Li, Yan Qian and Pascal Perez. "Problem-Driven and Technology-Enabled Solutions for Safer Communities." In: Augusto J.C. (eds) Handbook of Smart Cities. Springer, Cham, 2021 Online Link

Certifications

2022: NVIDIA DLI Instructor for Computer Vision for Industrial Inspections

2021: NVIDIA DLI Instructor for Fundamental of Deep Learning

2021: NVIDIA DLI University Ambassador at University of Wollongong

Awards

2018: University of Wollongong Full Tuition Fee Wavier Scholarship Award for PhD Studies

2017: Higher Education Commission (HEC), Pakistan Scholarship Award for PhD Studies

2016: President Gold Medal Award for Highest GPA in MS (RIME)

2013: NUST Endowment Fund Merit Based Scholarship Award for MS Degree

2011: Gold Medal Award for Highest GPA in Class in BSc Electrical (Electronics)

2011: Gold Medal Award for Highest GPA in Faculty of Engineering in BSc Electrical (Electronics)

Languages

Urdu: Native

English: Intermediate   *Conversationally fluent*

Highlighted Research Projects

○ Remondis – Edge-computing video analytics solution for plastic-bag contamination detection.

○ StopBlock – Edge-computing video analytics solution for monitoring blockage at cross-drainage hydraulic structures.

○ Unmanned Disaster Relief Helicopter – Design, analysis and fabrication of long range radio control system, airdrop mechanism, and elevated skid

○ Industrial Control Design – Anti-swing control of 3DOF crane system using LQR and H-Infinity controllers

References

○ **Senior Professor Pascal Perez**
Director SMART
University of Wollongong, Australia
Email: pascal@uow.edu.au

○ **Dr. Johan Barthelemy**
NVIDIA Corporation
Australia
Email: jbarthelemy@nvidia.com

○ **Associate Professor Wanqing Li**
School of Computing and Information Technology,
University of Wollongong, Australia
Email: wanqing@uow.edu.au