# Mamoona ASGHAR

**Institution:** IC4, Software Research Institute, Athlone Institute of Technology
**Academic Mentor:** Dr Yuansong Qiao
**Commercial Partner:** Evercam Ltd
**Commercial Mentor:** Marco Herbst

Mamoona received her Masters Degree in Computer Science, majoring in computer network security, from the International Islamic University, Islamabad. Her PhD degree was with the School of Computer Science and Electronic Engineering, University of Essex, in Colchester.

She was an Assistant Professor in Department of Computer Science & Information Technology at the Islamia University of Bahawalpur; and has 12 years lecturing and R&D experience.

She has published several ISI indexed journal articles with numerous international conference papers. She is also working as a reviewer for renowned journals (including *IEEE Transactions of Dependable and Secure Computing* and *IEEE Transactions on Information Forensics and Security*) and many other journals by Springer and Elsevier.

Her research interests include security aspects of multimedia (audio and video), compression, encryption, steganography, secure transmission in future networks, invisible watermarking and key management schemes. *See case study overleaf*

### Dr Yuansong Qiao
Dr Yuansong Qiao is a Senior Research Fellow at the SRI; a Principal Investigator of the Science Foundation Ireland (SFI) SIRG VidSDN project; and a Funded Investigator in the SFI CONFIRM Smart Manufacturing Centre. His PhD in Computer Applied Technology is from the Institute of Software, Chinese Academy of Sciences (ISCAS), Beijing. Dr Qiao's current research areas include Information Centric Networking, Software Defined Networking, Programmable IoT Systems, Multimedia Multisensory Systems, networking optimisation including Big Data analytics systems, distributed AI systems and blockchain systems.

### Marco Herbst
As CEO and CTO of Jobs.ie, Marco was responsible for leading a team of software developers to build Ireland's most popular recruitment website. He worked on CCTV hardware, software and large-scale camera deployments for seven years. He is an innovator in time-lapse and monitoring software for construction projects and urban CCTV systems. positioning his company as a market leader in the sector.

### IC4, Software Research Institute (SRI), Athlone Institute of Technology
The SRI was established to spur innovation, with a focus on bringing leading edge research to the market-place through applied research collaboration with industrial partners. It conducts research in digital media communications and applications; and network and infrastructure management.

### Evercam Ltd
Evercam provides an application programming interface for developers to make programmable cameras. Its solution enables users to write software that works with any camera connectable to the Internet. The company also provides time-lapse and project-management cameras.

## Mamoona's project

The General Data Protection Regulation (GDPR) has introduced new protections and rights around personal privacy, with resultant obligations on Data Controllers and Data Processors.

Mamoona's project idea is to create a privacy-first CCTV system designed specifically for the post General Data Protection Regulation (GDPR) world.

Existing technologies do not adequately deal with the implications of GDPR and make it very expensive and onerous for Data Controllers (CCTV Owners) to operate within the law.

This project will redesign the concept of a Network Video Recorder. It will consider every level of the CCTV system from camera through to storage (local & cloud); with regard to multiple stakeholders and the data they are entitled to.

Stakeholders to be considered include, but are not limited to:

- The CCTV owner (the owner of the premises being protected)
- Local Police
- Local Authorities
- Passers-by who have been recorded
- A third party who might be interested in data from the system, but has no rights to any non-anonymised data

Making provision for the rights of these stakeholders in a secure, privacy-conscious manner will require a re-think at every level and will necessitate new forms of anonymisation and encryption.

This project will involve installation and configuration of networked surveillance, coding of software, and testing of the system's performance and robustness against malicious attacks. The end result will be a framework for secure, privacy-conscious, GDPR compliant CCTV systems.

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