

## Short Biography

Amjad Ullah, Since May 2021, is a **Lecturer in Software engineering** at the Edinburgh Napier University, UK. He has **15+ years** of professional experience in the field of computing with a particular focus on **software engineering, distributed systems, and cloud computing**. During his experience, he spent 6+ years in **professional software engineering** with a focus on the development of real-time systems and ERP-based applications. He has **7 years of teaching experience** in the University of Stirling, University of Westminster and Edinburgh Napier University, where he taught numerous industry and research-relevant courses ranging from **software engineering and programming** related courses to advanced courses such as **Evolutionary computing, Big data, distributed systems, and cluster computing**. He has been recently awarded the **HEA Associate Fellowship**. Apart from his PhD research, he has **3+ years of Post-doctoral research experience**, where he is actively involved in the cutting edge research and development of innovation and research-based Horizon 2020 European projects including COLA<sup>1</sup>, CloudiFacturing<sup>2</sup>, ASCLEPIOS<sup>3</sup>, and Digitbrain<sup>4</sup>. In the past, He has also been involved in the EPSRC project titled Dynamic Adaptive Automatic Software Engineering (DAASE<sup>5</sup>). He has the experience of co-authored research papers in leading international journals and peer-reviewed international conference proceedings. Amjad actively reviews for the Journal of Gird Computing and Cognitive Computation. He also has a strong interest in contributing to the open source development community and so far contributed to various open source projects<sup>6</sup>.

## Educational Background

2012 – 2017 **PhD in Computing Science**, *University of Stirling*, UK

Thesis: Towards a biologically-inspired cloud elasticity framework

Supervisors: Dr. Jingpeng Li

2010 – 2011 **MSc in Advanced Distributed Systems**, *University of Leicester*, UK

Thesis: Channel-based communication in Message-oriented middleware (MOM)

Remarks: Won the best technical project award and got overall Distinction

Supervisors: Dr. Emilio Tuosto

2003 – 2005 **MSc in Computer Science (1<sup>st</sup> class)**, *Quaid-i-Azam University*, Pakistan

Thesis: ActiveX controls for reproducible real-time application programming experience

Remarks: Won the 2nd best project award

Supervisors: Dr. Afzal Bhatti

## Teaching Experience and Interests

Software Engineering, Distributed systems, Principles and practice of Programming, Essential skills for the information age, Programming and user interface design, Cloud computing and applications, Evolutionary and optimization techniques, Cluster computing, “Data structures, objects and algorithms” information systems, Database principles and applications.

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## Research Skills and Interests

Cloud-to-Edge computing, Distributed Systems, Big data, Internet-of-Things, Machine learning, Software engineering, Search-based software engineering, Dynamic resource provisioning, Auto-scaling, Resource optimisation, Application orchestration across Cloud-to-Edge ecosystem, scheduling and optimization techniques.

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## Research and Teaching Experience

5/21 – **Lecturer**, *Edinburgh Napier University*, Scotland, UK

7/18 – 5/21 **Research Associate**, *University of Westminster*, London, UK

- Description
- The design and development of a centralized authentication and authorization framework for the distributed CloudiFacturing environment.
  - The design and development of an open source Multi-Cloud orchestration system called MiCADO
  - The development of JQueuer to facilitate deadline-based scaling policies in integration with MiCADO
  - The extension of the MiCADO system for the orchestration and run-time management of IoT applications in the Cloud-to-Edge ecosystem
  - The extension of the MiCADO system to facilitate secure provision and management of SGX-based enclave

11/17 – 7/18 **Research Fellow**, *University of Stirling*, Stirling, UK

- Description
- Research and development in Cloud-to-edge ecosystem
  - Search-based software engineering
  - Intelligent mechanisms for dynamic resource provisioning in the context of cloud

2/13 – 7/18 **Teaching Fellow**, *University of Stirling*, Stirling, UK

Description Since 2013 in my role as PhD student and then Research Fellow, I was actively involved the teaching activities of the undergraduate and postgraduate courses including but not limited to Evolutionary and optimization techniques, Cluster computing, Software Engineering, “Data structures, objects and algorithms”, Information systems, Principles and practice of Programming, etc.

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## Professional Software Engineering Experience

1/11 – 8/12 **Software Developer**, *Open GI*, Worcester, UK

Description The design and development activities of an Open GI product for the insurance industry.

5/06 – 9/10 **Assistant Manager (Technical IT)**, *Information System and Solutions*, Islamabad, Pakistan

Description The design, development and training activities of an Enterprise Resource Planning (ERP) application.

4/05 – 5/06 **Software Engineer**, *RIMS*, Rawalpindi, Pakistan

Description The requirement analysis and development using Rational Dynamic Object Oriented Requirements System (DOORS) for safety-critical application.

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## Awards

- HEA Associate Fellowship (July 2020)
- Best PhD poster award at the PhD day for two consecutive years, i.e. (2016 and 17) in the University of Stirling
- SICSA (Scottish Informatics and Computer Science Alliance) PhD scholarship award for (3 & half years)
- DAASE project partial Ph.D. scholarship support for (six months)
- Winner of MSc best technical project award, University of Leicester, UK (2011)
- University of Leicester award of employability

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## Programming Tools and Technologies

Programming Java, C#.NET, VB.NET, ASP.NET, C++, Python, J unit, HTML, java script  
Research Cloud environments' APIs, Hadoop and Map Reduce, Optimization and Fuzzy logic libraries, owl API for semantic intelligence, R, Matlab, PEPA, BIO-PEPA, Model checking, Intel SGX  
Databases SQL Server, MS Access, Oracle 10 G, SQL  
API MFC, ATL COM, DOM, XML, Protégé, OWL, JMS, XSLT

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## List of Publications

### ○ Journal publications

1. Frimpong, Eugene, Antonis Michalas, and **Amjad Ullah**. "Footsteps in the fog: Certificate-less fog-based access control." *Computers & Security* 121 (2022): 102866.
2. **Ullah, Amjad**, Huseyin Dagdeviren, Resmi C. Ariyattu, James DesLauriers, Tamas Kiss, and James Bowden. "Micado-edge: Towards an application-level orchestrator for the cloud-to-edge computing continuum." *Journal of Grid Computing* 19 (2021): 1-28.
3. Deslauriers, J., Kiss, T., Ariyattu, R., Dang, H., **Ullah, Amjad.**, Bowden, J., Krefting, D., Pierantoni, G. and Terstyanszky, G. 2020. Cloud Apps To-Go: Cloud Portability with

TOSCA and MiCADO. Concurrency and Computation: Practice & Experience

4. **Amjad Ullah**, Jingpeng Li, and Amir Hussain. "Design and evaluation of a biologically-inspired cloud elasticity framework", *Cluster Computing*, Springer, Feb 2020.
5. **Amjad Ullah**, Jingpeng Li, Yindong Shen and Amir Hussain. "A control theoretical view of cloud elasticity: Taxonomy, survey and challenges", *Cluster Computing*, (2018): 1-30.
6. **Amjad Ullah**, Jingpeng Li, Amir Hussain and Erfu Yang. "Towards a biologically-inspired soft switching approach for cloud resource provisioning", *Cognitive Computation*, Springer, Vol. 8, Issue. 5, pp. 992-1005, October 2016.
7. **Amjad Ullah**, Jingpeng Li, and Amir Hussain. "Towards workload-aware cloud resource provisioning using a multi-controller fuzzy switching approach." *International Journal of High Performance Computing and Networking* 12.1 (2018): 13-25.

#### ○ Conference publications

1. Giacomini, Mikael, and **Amjad Ullah**. "YASF: A Vendor-Agnostic Framework for Serverless Computing." (2023).
2. Alexandros Bakas, Antonis Michalas and **Amjad Ullah**. "(F)unctional Sifting: A Privacy-Preserving Reputation System Through Multi-Input Functional Encryption", *25th Nordic Conference on Secure IT Systems (NordSec 2020)*, (Accepted), Oct 2020.
3. Hai-Van Dang, **Amjad Ullah**, Alexandros Bakas and Antonis Michalas. "Attribute-Based Symmetric Searchable Encryption", *Conference on Cloud SP*, Oct 2020.
4. **Amjad Ullah**, Jingpeng Li, Yindong Shen and Amir Hussain. "Genetic optimization of fuzzy membership functions for cloud resource provisioning", in *Proceedings of 2016 IEEE Symposium Series on Computational Intelligence (SSCI)* (SSCI 2016), Athens, Greece: IEEE, December 2016 pp. 1-8.
5. **Amjad Ullah**. "Towards workload-aware fine-grained control over cloud resources: Student Research Abstract", in *Proceedings of the 31st Annual ACM Symposium on Applied Computing (SAC 2016)*. New York, USA: ACM, April 2016 pp. 488-489.
6. Andrea Bracciali, Giulio Caravagna, and **Amjad Ullah**. "Survival vs. revenue: modelling and reasoning on population dynamics". *Proceedings of the Symposium on Theory of Modeling & Simulation-DEVS Integrative M&S Symposium*. Society for Computer Simulation International, 2013

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## References

References will be furnished on demand

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## Notes

<sup>1</sup><https://project-cola.eu/>

<sup>2</sup><https://www.cloudifactory.eu/>

<sup>3</sup><https://www.asclepios-project.eu/>

<sup>4</sup><https://digitbrain.eu/>

<sup>5</sup><http://daase.cs.ucl.ac.uk/about/>

<sup>6</sup><https://github.com/AmjadUllah>