



Uchechukwu Awada

Education and Research

September, 2019–June, 2023 **Doctor of Philosophy (PhD)**, INFORMATION AND COMMUNICATION ENGINEERING, ZHENGZHOU UNIVERSITY, Zhengzhou, China.

2023 Research on Multi-Task Orchestration in Federated Edge Computing. Interests: Internet of Things (IoT), Internet of Vehicles (IoV), Edge Computing, Cloud Computing, Aerial Computing, Distributed System, Wireless Communications, etc. Detailed research implementation:

- Deployment of private edge cluster
- Deployment of real-world mobile application to edge cluster
- Developed complex mathematical models
- Developed several optimization strategies and scheduling algorithms
- Using real-world cloud technologies, such as Kubernetes
- Utilising unmanned aerial vehicles (UAV) as an edge cluster
- Implementing a hybrid edge cluster and federated clusters using Kubernetes
- Advancing my research to cover internet of things (IoT) edge computing implementation
- Utilising machine learning (ML) technique for effective task dispatching in federated edge clusters
- Utilising federated learning (FL) technique for effective multi-task dispatching in federated edge clusters
- Analysing and utilising Alibaba cluster trace for training machine learning (ML) models

September, 2015–July, 2019 **Research Assistant**, SYSTEMS RESEARCH GROUP (SRG), SCHOOL OF COMPUTER SCIENCE, UNIVERSITY OF ST ANDREWS, St Andrews, UK.

2019 Developed a Container Management Systems (CMS) that orchestrates containerized applications on cloud virtual machines. CMS provides an efficient resource utilization and faster application execution time. Detailed achievements:

- Worked on real public cloud environment, i.e., Amazon EC2, Microsoft Azure, Google Cloud, CoreOS, OpenStack and IBM BlueMix
- Developed complex mathematical models
- Developed several optimization strategies

September, 2011–July, 2015 **Research Assistant**, NETWORK AND CLOUD COMPUTING LAB, SCHOOL OF COMPUTER SCIENCE AND TECHNOLOGY, DALIAN UNIVERSITY OF TECHNOLOGY, Dalian, China.

Worked on Cloud computing research and developed cloud computing energy consumption models to access detailed cloud computing energy consumption.

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Spetember, **Master of Engineering**, COMPUTER APPLIED TECHNOLOGY, HARBIN ENGINEERING UNIVERSITY, Harbin, China.
2009–July, 2011 Distinction

Spetember, **Bachelor of Science**, COMPUTER SCIENCE, EBONYI STATE UNIVERSITY, Abakaliki, Nigeria.
2001–July, 2006 Second Class Upper Division

Teaching Experience

Spetember, **CS 1002, 1003 and 1005 Tutor**, UNIVERSITY OF ST ANDREWS, St Andrews, UK.
2015–July, 2019 I tutored undergraduates on CS 1002, 1003 and 1005 modules. These are programming modules (Object Oriented Programming, i.e., Java Programming). I also supervised a Master's degree student on his final year project.

Academic Awards

2019–2023 Zhengzhou University Presidential Scholarship
2015–2019 University of St Andrews Scholarship
July 2017 Microsoft Research AI Summer School, Cambridge, UK
2011–2015 Dalian University of Technology Scholarship
2009–2011 Harbin Engineering University Scholarship

Professional Organisations and Services

2021–present Reviewer - IEEE Transactions on Vehicular Technology
2010–present Member - Association of Computing Machinery (ACM)
2011–present Member - Institute of Electronic and Electrical Engineers (IEEE) – Computer Society
2011–present Member - World Academy of Science, Engineering and Technology (WASET)
2014–present Reviewer - The Science and Information (SAI) Organization
2014–present Reviewer - IEEE Transactions on Cloud Computing
2014–present Editorial Board - International journal of Scientific and Engineering Research (IJSER)
2017–present Member - CompuCast compucast.io
2017–present Member - University and College Union (UCU) United Kingdom

Skills and Tools

Advanced RESEARCH, Academic Research, Industrial Research
Advanced JAVA, VisualBasic, MATLAB
Advanced PYTHON, HTML, L^AT_EX, OpenOffice, Linux
Advanced Computer Hardware and Support

Academic Research Presentations

2021 Oral Presentaion at the IEEE CLOUD 2021 International Conference in Chicago, USA

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- 2020 Oral Presentaion at the IEEE EDGE 2020 International Conference in Beijing, China
- 2017 Poster at the Annual SICSA DemoFest Conference in Edinbrugh, UK
- 2017 Oral Presentation at the 2017 IEEE/ACM CCGrid Conference in Madrid, Spain
- 2017 Poster at the Annual SICSA PhD Conference in Dundee, UK
- 2017 Oral Presentaion at the 2017 ICC Conference in Cambridge, UK
- 2012 Oral Presentation at the 2012 IEEE APCloudCC Conference in Shenzhen, China

Spoken Languages

English	Offical Language	
Ibo	Mothertongue	
Yoruba	Fluent	
Hausa	Intermediate	
Chinese	Intermediate	<i>Conversationally fluent</i>

Publication List

1. Uchechukwu Awada, Jiankang Zhang, Sheng Chen and Shuangzhi Li, "AirEdge: A Dependency-Aware Multi-Task Orchestration in Federated Aerial Computing," 2021, in IEEE Transactions on Vehicular Technology, doi: 10.1109/TVT.2021.3127011. **IF: 6.239(SCI)**
2. Uchechukwu Awada, Jiankang Zhang, Sheng Chen, Shuangzhi Li and Shouyi Yang, "EdgeDrones: Co-Scheduling of Drones for Multi-Location Aerial Computing Missions," 2023, in Journal of Network and Computer Applications. doi: <https://doi.org/10.1016/j.jnca.2023.103632>. **IF: 7.574(Elsevier SCI)**
3. Uchechukwu Awada, Jiankang Zhang, Sheng Chen, Shuangzhi Li and Shouyi Yang, "Integrated Edge-Enabled IoV: Towards a Resource-Aware Multi-Task Offloading and Dependency-Aware Scheduling," 2022, in Journal of Systems Architecture. **IF: 5.836 (Elsevier SCI)** (Minor Revision)
4. Uchechukwu Awada, Jiankang Zhang, Sheng Chen, Shuangzhi Li and Shouyi Yang, "Learning-Based Multi-Task Dispatching and Co-location in Integrated Edge Systems," 2022, in Journal of Digital Communications and Networks. **IF: 6.348 (Elsevier SCI)** (Under Review)
5. Uchechukwu Awada, Jiankang Zhang, Sheng Chen, Shuangzhi Li and Shouyi Yang, "Learning-Based Multi-Task Dispatching and Co-location in Integrated Edge Systems," 2022, in ZTE Communications. (Accepted for Publication) **(CSA)**
6. Uchechukwu Awada, Jiankang Zhang, Sheng Chen and Shuangzhi Li, "Air-to-Air Collaborative Learning: A Multi-Task Orchestration in Federated Aerial Computing," 2020 IEEE International Conference on Cloud Computing (CLOUD), 2021, pp. 671-680, doi: 10.1109/CLOUD53861.2021.00086. **(EI)**
7. Uchechukwu Awada and Jiankang Zhang, "Edge Federation: A Dependency-Aware Multi-Task Dispatching and Co-location in Federated Edge Container-Instances," 2020 IEEE International Conference on Edge Computing (EDGE), 2020, pp. 91-98, doi: 10.1109/EDGE50951.2020.00021. **(EI)**

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8. Uchechukwu Awada, Adam Barker: Improving Resource Efficiency of Container-Instance Clusters on Clouds. 2017 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID); 05/2017, DOI:10.1109/CCGRID.2017.113. **(EI)**
9. Uchechukwu Awada, Adam Barker: Resource Efficiency in Container-Instance Clusters. Second International Conference on Internet of Things, Data and Cloud Computing, Cambridge , United Kingdom; 03/2017, DOI:10.1145/3018896.3056798. **(EI)**
10. Awada Uchechukwu, Keqiu Li, Keqin Li: Scalable Analytic Models for Performance Efficiency in the Cloud. 2014 IEEE/ACM 7th International Conference on Utility and Cloud Computing (UCC), London, United Kingdom; 12/2014, DOI:10.1109/UCC.2014.164. **(EI)**
11. Awada Uchechukwu, Keqiu Li, Keqin Li: High-Performance Processing of Large-Scale Parallel Applications in Heterogeneous Cloud Computing Data Centers. 2014 IEEE International Conference on Big Data and Cloud Computing (BdCloud); 01/2014. **(EI)**
12. Changqing Ji, Yu Li, Wenming Qiu, Uchechukwu Awada, Keqiu Li: Big Data Processing in Cloud Computing Environments. 2012 International Symposium on Pervasive Systems, Algorithms and Networks; 12/2012, DOI:10.1109/I-SPAN.2012.9. **(EI)**
13. Awada Uchechukwu, keqiu Li, Yanming Shen: Improving Cloud Computing Energy Efficiency. IEEE Asia Pacific Cloud Computing Congress 2012; 11/2012, DOI:10.1109/APCloudCC.2012.6486511. **(EI)**
14. Uchechukwu Awada, Keqiu Li, Yanming Shen: Energy Consumption in Cloud Computing Data Centers. 06/2014; 3(3-3)., DOI:10.11591/closer.v3i3.6346
15. Awada Uchechukwu and Keqiu Li and Yanming Shen: Improving Cloud Computing Data Centers Energy Efficiency.
16. CHANGQING JI, YU LI, WENMING QIU, YINGWEI JIN, YUJIE XU, UCHECHUKWU AWADA, KEQIU LI, WENYU QU: Big data processing: Big challenges. Journal of Interconnection Networks 01/2013; 13(3-03n04)., DOI:10.1142/S0219265912500090. **(ESCI)**
17. Uchechukwu Awada: Performance Efficiency in Heterogeneous Cloud. 08/2018; DOI: 10.13140/RG.2.2.10897.89446
18. Uchechukwu Awada: CMS: Container Orchestration Across Multi-region Clouds. 06/2018; DOI: 10.13140/RG.2.2.23490.48321
19. Uchechukwu Awada: CMS: CMS: Coupled Container Orchestration in the Cloud. 07/2018; DOI: 10.13140/RG.2.2.23333.19688
20. Uchechukwu Awada: CMS: CMS: Optimal Container Management Service in Cloud Clusters. 07/2018; DOI: 10.13140/RG.2.2.30044.08322
21. Awada Uchechukwu: Hybrid Cloud Federation: A Case of Better Cloud Resource Efficiency. IEEE International Conference on Cloud Computing 2018. **(EI)**
22. Awada Uchechukwu: Application-Container Orchestration Tools and Platform-as-a-Service Clouds: A Survey. 2018.

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23. Awada Uchechukwu: Optimising Application-Container Orchestration on Container-Instance Clusters. 2018 International Conference on Cloud-Based Communication Technologies and Applications.
24. Uchechukwu Awada: Optimising Application-Container Orchestration on Container-Instance Clusters. 10/2017; DOI: 10.13140/RG.2.2.28323.76320
25. Awada Uchechukwu: Application Container Orchestration on Clouds. 06/2017 The Scottish Informatics & Computer Science Alliance, PhD Conference, Dundee, UK. DOI: 10.13140/RG.2.2.19993.72808