Department	School of Computing
Supervisors	Craig Thomson
Project Title	Mobile Edge Solutions for Energy and Performance Improvement in Wireless Sensor Networks

PROJECT DESCRIPTION

The use of Mobile Edge solutions to influence the network performance and/or energy consumption in Wireless Sensor Networks (WSNs) is an exciting development in IoT. The aim of this project would be to implement solutions in Mobile Edge devices – potentially robots or Unmanned Aerial Vehicles (UAVs) - such that these devices may utilise Machine Learning techniques in order to influence network performance in real time. Supporting our approach to Green Computing, this research would have the potential to positively influence battery consumption in sensor nodes by affecting IoT protocols at both the Network and MAC layers.

Perspective applicants are encouraged to contact the Supervisor before submitting their applications. Applications should make it clear the project you are applying for and the name of the supervisors.

Academic qualifications

A first degree (at least a 2.1) ideally in Computer Science with a good fundamental knowledge of network protocols and simulation tools.

English language requirement

IELTS score must be at least 6.5 (with not less than 6.0 in each of the four components). Other, equivalent qualifications will be accepted. Full details of the University's policy are available online.

Essential attributes:

- Experience of fundamental research into networking protocols.
- Competent in programming and simulation tools such as Omnet++.
- Knowledge of Machine Learning.
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills relevant to the project
- Good time management

Desirable attributes:

A willingness to be part of the amazing research community we have built at Edinburgh Napier University.

Indicative Bibliography

ıed, A., Bakar, K. A., Channa, M. I., Khan, A. W., & Haseeb, K. (2017). Energy-aware and secure routing with trust for disaster response wireless sensor network. *Peer-to-Peer Networking and Applications*, *10*(1), 216–237. https://doi.org/10.1007/s12083-015-0421-4

mson, C., Wadhaj, I., Tan, Z., & Al-Dubai, A. (2021). Towards an energy balancing solution for wireless sensor network with mobile sink node. *Computer Communications*, *170*, 50–64. https://doi.org/10.1016/J.COMCOM.2021.01.011

	Uddin, M. A., Mansour, A., Jeune, D. le, Ayaz, M., & Aggoune, E. H. M. (2018). Uav-assisted dynamic clustering of wireless sensor networks for crop health monitoring. *Sensors (Switzerland)*, *18*(2). https://doi.org/10.3390/s18020555
Enquiries	For informal enquiries about this PhD project, please contact Dr Craig Thomson at C.Thomson3@napier.ac.uk
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