

Department	School of Computing
Supervisors	Sana Ullah Jan Bill Buchanan
Project Title	Multi-modal machine learning for cybersecurity in the Internet-of-Things (IoT)
<p>PROJECT DESCRIPTION</p> <p>With the time, the intruders are becoming more intelligent with higher ability of attacking networks without being identified. Multi-modal machine learning-based intelligent intrusion detection systems must be designed to identify stealthy and adversarial cyber attacks. Learning different representations of attack features will provide higher capabilities of distinguishing between the legitimate event and the illegitimate pattern. However, these advances should be developed within the limited resources of IoT such that a trade-off between computational complexity and efficiency of the system is achieved.</p> <p>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.</p> <p>Academic qualifications A first degree (at least a 2.1) ideally in Computer Science/Engineering/Mathematics and relevant fields with a good fundamental knowledge of computing concepts.</p> <p>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.</p> <p>Essential attributes:</p> <ul style="list-style-type: none"> • Experience of fundamental programming in R/Java/Python/Matlab etc. • Competent in Click here to enter text. • Knowledge of basic computer science concepts • Good written and oral communication skills • Strong motivation, with evidence of independent research skills relevant to the project • Good time management <p>Desirable attributes: Interest in cybersecurity and artificial intelligence or machine learning</p>	
Indicative Bibliography	Jan, Sana Ullah, Young Doo Lee, and In Soo Koo. "A distributed sensor-fault detection and diagnosis framework using machine learning." <i>Information Sciences</i> 547 (2021): 777-796.
Enquiries	For informal enquiries about this PhD project, please contact Dr. Sana Ullah Jan (s.jan@napier.ac.uk)
Web page	https://www.napier.ac.uk/research-and-innovation/research-degrees/application-process

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