

Department	School of Computing
Supervisors	Valerio Giuffrida
Project Title	Semi-Supervised, Unsupervised, and Self-Supervised Transfer Learning for Computer Vision
<p>PROJECT DESCRIPTION</p> <p>Transfer learning has been demonstrated to improve the generalisation of deep neural networks to real-world applications, especially in situations where labelled training sets are missing. Current proposed methods work under certain conditions or tasks and, although a few universal approaches have been proposed, there are still several gaps, such as preventing negative transfer or catastrophic forgetting.</p> <p>The successful applicant will conduct research on transfer learning approaches, using partially labelled, or even unlabelled, datasets. The development of novel transfer learning approaches will be evaluated on real-world inter-disciplinary computer vision problems, such as plant and medical image analysis.</p> <p>Prospective 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 supervisor(s).</p> <p>Academic qualifications</p> <p>A first degree (at least a 2.1) ideally in computer science (with an AI specialisation) with a good fundamental knowledge of machine learning.</p> <p>English language requirement</p> <p>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 machine learning and deep learning • Competent in python programming • Knowledge of transfer learning and/or domain adaptation • Good written and oral communication skills • Strong motivation, with evidence of independent research skills relevant to the project • Good time management <p>Desirable attributes:</p> <ul style="list-style-type: none"> - Knowledge of (or experience with) transfer learning approaches - Experience with adversarial learning - Working Knowledge of probability and statistics 	
Indicative Bibliography	<p>Bruno Casella, Alessio Chisari, Sebastiano Battiato, Mario Valerio Giuffrida (2022) "Transfer Learning via Test-time Neural Networks Aggregation," International Conference on Computer Vision Theory and Applications.</p> <p>Litrico, Mattia, Sebastiano Battiato, Sotirios A. Tsaftaris, and Mario V. Giuffrida 2021. "Semi-Supervised Domain Adaptation for Holistic Counting under Label Gap" Journal of Imaging 7, no. 10: 198. https://doi.org/10.3390/jimaging7100198</p>

Enquiries	For informal enquiries about this PhD project, please contact Valerio Giuffrida at v.giuffrida@napier.ac.uk
Web page	https://www.napier.ac.uk/research-and-innovation/research-degrees/application-process