

<b>Department</b>	School of Computing
<b>Supervisors</b>	Valerio Giuffrida
<b>Project Title</b>	<b>Semi-Supervised, Unsupervised, and Self-Supervised Transfer Learning for Computer Vision</b>
<p><b>PROJECT DESCRIPTION</b></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><b>Academic qualifications</b></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><b>English language requirement</b></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. <a href="#">Full details of the University's policy</a> are available online.</p> <p><b>Essential attributes:</b></p> <ul style="list-style-type: none"> <li>• Experience of fundamental machine learning and deep learning</li> <li>• Competent in python programming</li> <li>• Knowledge of transfer learning and/or domain adaptation</li> <li>• Good written and oral communication skills</li> <li>• Strong motivation, with evidence of independent research skills relevant to the project</li> <li>• Good time management</li> </ul> <p><b>Desirable attributes:</b></p> <ul style="list-style-type: none"> <li>- Knowledge of (or experience with) transfer learning approaches</li> <li>- Experience with adversarial learning</li> <li>- Working Knowledge of probability and statistics</li> </ul>	
<b>Indicative Bibliography</b>	<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.  <a href="https://doi.org/10.3390/jimaging7100198">https://doi.org/10.3390/jimaging7100198</a></p>

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