

<b>Department</b>	School of Computing
<b>Supervisors</b>	Valerio Giuffrida
<b>Project Title</b>	Making AI more eco-friendly
<p><b>PROJECT DESCRIPTION</b></p> <p>As AI is becoming more ubiquitous in many research fields and applications, AI models need to be energy efficient. The training of AI models (such as deep networks) requires extensive computational power, especially when large datasets are used, and multiple runs for prototyping and hyper-parameters tuning are needed. Typically, when training from scratch is performed, the energy demands of such models are not negligible anymore, especially when such models are conceived to be deployed in resource-constrained devices in contexts like IoT and edge computing.</p> <p>The prospective application will tackle this major challenge, devising new energy-efficient training and inference paradigms towards the Green AI concept.</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 a specialisation in AI) with a good fundamental knowledge of software engineering.</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 deep learning frameworks (e.g., PyTorch, Tensorflow, etc.)</li> <li>• Competent in Python Programming</li> <li>• Knowledge of embedded devices</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 compiled programming languages, such C/C++</li> <li>- Knowledge of data quantisation</li> <li>- Knowledge of current GPGPU APIs (e.g., CUDA)</li> </ul>	
<b>Indicative Bibliography</b>	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.
<b>Enquiries</b>	For informal enquiries about this PhD project, please contact Valerio Giuffrida at <a href="mailto:v.giuffrida@napier.ac.uk">v.giuffrida@napier.ac.uk</a>
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