

Department	School of Computing
Supervisors	Shufan Yang
Project Title	Photoacoustic Image Reconstruction with Generative Adversarial Networks
<p>PROJECT DESCRIPTION</p> <p>Photoacoustic imaging is a pre-clinical technology for creating in-vivo images using Ultra-Sound Transducers to pick up Ultrasonic waves produced by samples excited by pulse lasers.</p> <p>Generative Adversarial Networks (GAN) is an unsupervised learning architecture in which two sub-models play a zero sums game. A Generator and a Discriminate are in a competition, the generator model must create an instance of data which fits into the domain of the data set it is trained on, the discriminator must attempt to determine if the neural network generators output is fake. The training continues until the Discriminator cannot tell real from generated data.</p> <p>The PhD candidate will explores how to use the cycle generative adversarial network (Gan) architecture to remove limited view artifacts from photoacoustic images via image translation. The PhD candidate will gain knowledge in fields such as photonic devices, photoacoustic, and will learn various useful skills such as machine learning.</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 A first degree (at least a 2.1) ideally in computer science or related area. with a good fundamental knowledge of Software programing.</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 signal processing ● Competent in software programing ● Knowledge of python programing ● Good written and oral communication skills ● Strong motivation, with evidence of independent research skills relevant to the project ● Good time management 	
Indicative Bibliography	Alankrita Aggarwal, Mamta Mittal, Gopi Battineni, Generative adversarial network: An overview of theory and applications, International Journal of Information Management Data Insights,

	Volume 1, Issue 1, (https://www.sciencedirect.com/science/article/pii/S2667096820300045)
Enquiries	For informal enquiries about this PhD project, please contact s.yang@napier.ac.uk
Web page	https://www.napier.ac.uk/research-and-innovation/research-degrees/application-process