Title: *StyleGAN: implementation and extension*

Synopsis: StyleGAN is a state-of-the-art approach for generative adversarial neural networks for images. In this project you will re-implement the existing StyleGAN networks and consider improvements, drawing from related work in the literature.

Related work:
• StyleGAN: https://arxiv.org/abs/1812.04948, https://arxiv.org/abs/1912.04958
• Related work for possible exentsions: Gatsby et al.: https://arxiv.org/pdf/1508.06576.pdf, http://www.faculty.idc.ac.il/arik/site/foa/The_Face_of_Art.pdf, http://openaccess.thecvf.com/content_cvpr_2017/html/Chen_StyleBank_An_Explicit_CVPR_2017_paper.html, https://arxiv.org/abs/2001.01026)

Prerequisites: prior exposure to neural networks, ideally Deep Learning lecture.

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Title: *Augmenting physical simulations using neural networks*

Synopsis: In the project you will explore how the simulation of simple physical systems (such as a pendulum or bouncing balls) can be improved using neural networks, specifically how neural networks can be used to remove some of the idealizations that are inherent in classical approaches (no friction, simple elasticity models, …)

Prerequisite: some prior experience with simulating ordinary differential equations would be helpful; similarly for neural networks