



GANs for Data Augmentation and Privacy

✓ **Video:** Welcome to Course 3
2 min

✓ **Quiz:** GANs Hippocratic Oath
1 question

✓ **Video:** Welcome to Week 1
1 min

✓ **Reading:** Syllabus
5 min

✓ **Reading:** Connect with your mentors and fellow learners on Slack!
5 min

✓ **Video:** Overview of GAN Applications
6 min

✓ **Video:** Data Augmentation: Methods and Uses
5 min

✓ **Reading:** (Optional) Automated Data Augmentation
1h

▶ **Video:** Data Augmentation: Pros & Cons
2 min

▶ **Video:** GANs for Privacy
4 min

▶ **Video:** GANs for Anonymity
1 min

⌂ **Programming Assignment:** Data Augmentation
3h

📖 **Reading:** (Optional) Talking Heads

✓ **Reading:** (Optional) De-identification
40 min



Works Cited

All of the resources cited in Course 3 Week 1, in one place. You are encouraged to read these papers/sites if they interest you! There are many resources this week, including recent research on emerging uses of GANs. They are listed in the order that they appear in the lessons.

From the videos:

- Semantic Image Synthesis with Spatially-Adaptive Normalization (Park et al., 2019): <https://arxiv.org/abs/1903.07291>
- Photo-Realistic Single Image Super-Resolution Using a Generative Adversarial Network (Ledig et al., 2017): <https://arxiv.org/abs/1609.04802>
- Multimodal Unsupervised Image-to-Image Translation (Huang et al., 2017): <https://github.com/NVLabs/MUNIT>
- StackGAN: Text to Photo-realistic Image Synthesis with Stacked Generative Networks (Zhang et al., 2017): <https://arxiv.org/abs/1612.03242>
- Few-Shot Adversarial Learning of Realistic Neural Talking Head Models (Shysheya, Burkov, and Lempitsky, 2019): <https://arxiv.org/abs/1905.08194>
- Snapchat: <https://www.snapchat.com>
- MaskGAN: Towards Diverse and Interactive Facial Image Manipulation (Zhang et al., 2020): <https://arxiv.org/abs/1907.11922>
- When AI generated paintings dance to music... (2019): <https://www.youtube.com/watch?v=85l961MmY8Y>
- Data Augmentation Generative Adversarial Networks (Antoniou, Storkey, and Edwards, 2018): <https://arxiv.org/abs/1711.04340>
- Training progression of StyleGAN on H&E tissue fragments (Zhou, 2019): <https://twitter.com/realSharonZhou/status/1182877446690852867>
- Establishing an evaluation metric to quantify climate change image realism (Zhou, Luccioni, Cosne, Bernstein, and Bengio, 2020): <https://iopscience.iop.org/article/10.1088/2632-2153/ab7657/meta>
- Deepfake example (2019): https://en.wikipedia.org/wiki/File:Deepfake_example.jpg
- Introduction to adversarial robustness (Kolter and Madry): <https://adversarial-tutorial.org/introduction/>
- Large Scale GAN Training for High Fidelity Natural Image Synthesis (Brock et al., 2019): <https://openreview.net/pdf?id=B1xsqj09Fm>
- GazeGAN - Unpaired Adversarial Image Generation for Gaze Estimation (Zhou et al., 2019): <https://arxiv.org/abs/1905.08194>