

References

- [Arjovsky et al., 2017] Arjovsky, M., Chintala, S., and Bottou, L. (2017). Wasserstein GAN. *ArXiv e-prints*.
- [Badrinarayanan et al., 2015] Badrinarayanan, V., Handa, A., and Cipolla, R. (2015). Segnet: A deep convolutional encoder-decoder architecture for robust semantic pixel-wise labelling. *CoRR*, abs/1505.07293.
- [Bauer et al., 2017] Bauer, M., Rojas-Carulla, M., Swiatkowski, J., Schölkopf, B., and Turner, R. E. (2017). Discriminative k-shot learning using probabilistic models. *arXiv e-prints*, page arXiv:1706.00326.
- [Bender et al., 2018] Bender, G., Kindermans, P.-J., Zoph, B., Vasudevan, V., and Le, Q. (2018). Understanding and simplifying one-shot architecture search. In Dy, J. and Krause, A., editors, *Proceedings of the 35th International Conference on Machine Learning*, volume 80 of *Proceedings of Machine Learning Research*, pages 550–559, Stockholm, Sweden, Stockholm Sweden. PMLR.
- [Bergstra et al., 2011] Bergstra, J. S., Bardenet, R., Bengio, Y., and Kégl, B. (2011). Algorithms for hyper-parameter optimization. In Shawe-Taylor, J., Zemel, R. S., Bartlett, P. L., Pereira, F., and Weinberger, K. Q., editors, *Advances in Neural Information Processing Systems 24*, pages 2546–2554. Curran Associates, Inc.
- [Blundell et al., 2015] Blundell, C., Cornebise, J., Kavukcuoglu, K., and Wierstra, D. (2015). Weight uncertainty in neural network. In *Proc. Int. Conf. on Machine Learning*.
- [Cai et al., 2017] Cai, H., Chen, T., Zhang, W., Yu, Y., and Wang, J. (2017). Reinforcement learning for architecture search by network transformation. *CoRR*, abs/1707.04873.
- [Canziani et al., 2016] Canziani, A., Paszke, A., and Culurciello, E. (2016). An analysis of deep neural network models for practical applications. *CoRR*, abs/1605.07678.
- [Elsken et al., 2019] Elsken, T., Metzen, J. H., and Hutter, F. (2019). Neural architecture search: A survey. *Journal of Machine Learning Research*, 20:1–21.

- [Eykholt et al., 2018] Eykholt, K., Evtimov, I., Fernande, E., Li, B., Rahmati, A., Xiao, C., Prakash, A., Kohno, T., and Song, D. (2018). Robust physical-world attacks on deep learning visual classification. In *Proc. Conference on Computer Vision and Pattern Recognition*.
- [Gal, 2016] Gal, Y. (2016). *Uncertainty in Deep Learning*. PhD thesis, University of Cambridge.
- [Gal and Ghahramani, 2016] Gal, Y. and Ghahramani, Z. (2016). Dropout as a bayesian approximation: Representing model uncertainty in deep learning. In *Proc. Int. Conference on Machine Learning*.
- [Gal et al., 2017] Gal, Y., Hron, J., and Kendall, A. (2017). Concrete dropout. In Guyon, I., Luxburg, U. V., Bengio, S., Wallach, H., Fergus, R., Vishwanathan, S., and Garnett, R., editors, *Advances in Neural Information Processing Systems 30*, pages 3581–3590. Curran Associates, Inc.
- [Gal and Smith, 2018] Gal, Y. and Smith, L. (2018). Sufficient Conditions for Idealised Models to Have No Adversarial Examples: a Theoretical and Empirical Study with Bayesian Neural Networks. *ArXiv e-prints*.
- [Goodfellow et al., 2014a] Goodfellow, I. J., Pouget-Abadie, J., Mirza, M., Xu, B., Warde-Farley, D., Ozair, S., Courville, A., and Bengio, Y. (2014a). Generative Adversarial Networks. *ArXiv e-prints*.
- [Goodfellow et al., 2014b] Goodfellow, I. J., Shlens, J., and Szegedy, C. (2014b). Explaining and Harnessing Adversarial Examples. *ArXiv e-prints*.
- [Gu et al., 2016] Gu, S., Holly, E., Lillicrap, T. P., and Levine, S. (2016). Deep reinforcement learning for robotic manipulation. *CoRR*, abs/1610.00633.
- [Gulrajani et al., 2017] Gulrajani, I., Ahmed, F., Arjovsky, M., Dumoulin, V., and Courville, A. (2017). Improved Training of Wasserstein GANs. *ArXiv e-prints*.
- [Haarnoja et al., 2018] Haarnoja, T., Pong, V., Zhou, A., Dalal, M., Abbeel, P., and Levine, S. (2018). Composable deep reinforcement learning for robotic manipulation. *CoRR*, abs/1803.06773.
- [Haarnoja et al., 2017] Haarnoja, T., Tang, H., Abbeel, P., and Levine, S. (2017). Reinforcement learning with deep energy-based policies. *CoRR*, abs/1702.08165.
- [Hasselt, 2010] Hasselt, H. V. (2010). Double q-learning. In Lafferty, J. D., Williams, C. K. I., Shawe-Taylor, J., Zemel, R. S., and Culotta, A., editors, *Advances in Neural Information Processing Systems 23*, pages 2613–2621. Curran Associates, Inc.
- [He et al., 2016a] He, K., Zhang, X., Ren, S., and Sun, J. (2016a). Deep residual learning for image recognition. In *IEEE Int. Conference on Computer Vision and Pattern Recognition*.
- [He et al., 2016b] He, K., Zhang, X., Ren, S., and Sun, J. (2016b). Identity mappings in deep residual networks. In *Proc. European Conference on Computer Vision*.

- [Hu et al., 2017] Hu, J., Shen, L., and Sun, G. (2017). Squeeze-and-excitation networks. *CoRR*, abs/1709.01507.
- [Huang et al., 2016] Huang, G., Liu, Z., and Weinberger, K. Q. (2016). Densely connected convolutional networks. *CoRR*, abs/1608.06993.
- [Huang et al., 2017] Huang, S. H., Papernot, N., Goodfellow, I. J., Duan, Y., and Abbeel, P. (2017). Adversarial attacks on neural network policies. *CoRR*, abs/1702.02284.
- [Jégou et al., 2016] Jégou, S., Drozdal, M., Vázquez, D., Romero, A., and Bengio, Y. (2016). The one hundred layers tiramisu: Fully convolutional densenets for semantic segmentation. *CoRR*, abs/1611.09326.
- [Kahn et al., 2017] Kahn, G., Villafior, A., Pong, V., Abbeel, P., and Levine, S. (2017). Uncertainty-aware reinforcement learning for collision avoidance. *CoRR*, abs/1702.01182.
- [Karras et al., 2018] Karras, T., Aila, T., Laine, S., and Lehtinen, J. (2018). Progressive Growing of GANs for Improved Quality, Stability, and Variation. In *Proc. Int. Conf. on Learning Representations*.
- [Kendall and Gal, 2017] Kendall, A. and Gal, Y. (2017). What uncertainties do we need in bayesian deep learning for computer vision? In *Proc. Int. Conf. on Neural Information Processing Systems*.
- [Kennedy, 2010] Kennedy, J. (2010). Particle swarm optimization. In *Encyclopedia of Machine Learning*, pages 760–766. Springer US.
- [Kennedy and Eberhart, 1995] Kennedy, J. and Eberhart, R. (1995). Particle swarm optimization. In *Proceedings of ICNN'95 - International Conference on Neural Networks*, volume 4, pages 1942–1948 vol.4.
- [Kingma and Welling, 2014] Kingma, D. P. and Welling, M. (2014). Auto-Encoding Variational Bayes. *ArXiv e-prints*.
- [Koch et al., 2015] Koch, G., Zemel, R., and Salakhutdinov, R. (2015). Siamese neural networks for one-shot image recognition. In *Proc. ICML Deep Learning workshop*.
- [Komer et al., 2014] Komer, B., Bergstra, J., and Eliasmith, C. (2014). Hyperopt-Sklearn: automatic hyperparameter configuration for Scikit-learn. In *Proc. SciPy 2014*.
- [Krizhevsky et al., 2012] Krizhevsky, A., Sutskever, I., and Hinton, G. (2012). Imagenet classification with deep convolutional neural networks. In *Proc. NIPS*.
- [Li et al., 2018] Li, H., Xu, Z., Taylor, G., and Goldstein, T. (2018). Visualizing the loss landscape of neural nets. In *Proc. Int. Conf. on Neural Information Processing Systems*.
- [Lillicrap et al., 2015] Lillicrap, T. P., Hunt, J. J., Pritzel, A., Heess, N., Erez, T., Tassa, Y., Silver, D., and Wierstra, D. (2015). Continuous control with deep reinforcement learning. *CoRR*, abs/1509.02971.

- [Miyato et al., 2018] Miyato, T., Maeda, S., Ishii, S., and Koyama, M. (2018). Virtual adversarial training: A regularization method for supervised and semi-supervised learning. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, pages 1–1.
- [Mnih et al., 2013] Mnih, V., Kavukcuoglu, K., Silver, D., Graves, A., Antonoglou, I., Wierstra, D., and Riedmiller, M. (2013). Playing atari with deep reinforcement learning. In *NIPS Deep Learning Workshop*.
- [Mroueh et al., 2017] Mroueh, Y., Li, C.-L., Sercu, T., Raj, A., and Cheng, Y. (2017). Sobolev GAN. *ArXiv e-prints*.
- [NHTSA, 2017] NHTSA (2017). Tesla crash evaluation report (pe 16-007). Technical report, U.S. Department of Transportation, National Highway Traffic Safety Administration.
- [Nowozin et al., 2016] Nowozin, S., Cseke, B., and Tomioka, R. (2016). f-GAN: Training Generative Neural Samplers using Variational Divergence Minimization. *ArXiv e-prints*.
- [Oliver et al., 2018] Oliver, A., Odena, A., Raffel, C. A., Cubuk, E. D., and Goodfellow, I. (2018). Realistic evaluation of deep semi-supervised learning algorithms. In Bengio, S., Wallach, H., Larochelle, H., Grauman, K., Cesa-Bianchi, N., and Garnett, R., editors, *Advances in Neural Information Processing Systems 31*, pages 3235–3246. Curran Associates, Inc.
- [Papernot et al., 2018] Papernot, N., Faghri, F., Carlini, N., Goodfellow, I., Feinman, R., Kurakin, A., Xie, C., Sharma, Y., Brown, T., Roy, A., Matyasko, A., Behzadan, V., Hambardzumyan, K., Zhang, Z., Juang, Y.-L., Li, Z., Sheatsley, R., Garg, A., Uesato, J., Gierke, W., Dong, Y., Berthelot, D., Hendricks, P., Rauber, J., and Long, R. (2018). Technical report on the cleverhans v2.1.0 adversarial examples library. *arXiv preprint arXiv:1610.00768*.
- [Papernot et al., 2016] Papernot, N., McDaniel, P., Wu, X., Jha, S., and Swami, A. (2016). Distillation as a defense to adversarial perturbations against deep neural networks. In *2016 IEEE Symposium on Security and Privacy (SP)*, pages 582–597.
- [Radford et al., 2015] Radford, A., Metz, L., and Chintala, S. (2015). Unsupervised Representation Learning with Deep Convolutional Generative Adversarial Networks. *ArXiv e-prints*.
- [Real et al., 2019] Real, E., Aggarwal, A., Huang, Y., and Le, Q. V. (2019). Regularized evolution for image classifier architecture search. In *Proc. AAAI Conference on Artificial Intelligence*.
- [Rezende and Viola, 2018] Rezende, D. J. and Viola, F. (2018). Taming vaes. *CoRR*, abs/1810.00597.
- [Ritter et al., 2018] Ritter, H., Botev, A., and Barber, D. (2018). A scalable laplace approximation for neural networks. In *International Conference on Learning Representations*.

- [Russakovsky et al., 2014] Russakovsky, O., Deng, J., Su, H., Krause, J., Satheesh, S., Ma, S., Huang, Z., Karpathy, A., Khosla, A., Bernstein, M. S., Berg, A. C., and Li, F. (2014). Imagenet large scale visual recognition challenge. *CoRR*, abs/1409.0575.
- [Salimans et al., 2016] Salimans, T., Goodfellow, I., Zaremba, W., Cheung, V., Radford, A., and Chen, X. (2016). Improved Techniques for Training GANs. *ArXiv e-prints*.
- [Samangouei et al., 2018] Samangouei, P., Kabkab, M., and Chellappa, R. (2018). Defense-gan: Protecting classifiers against adversarial attacks using generative models. In *Proc. International Conference on Learning Representations*.
- [Schönherr et al., 2019] Schönherr, L., Kohls, K., Zeiler, S., Holz, T., and Kolossa, D. (2019). Adversarial attacks against automatic speech recognition systems via psychoacoustic hiding. In *Network and Distributed System Security Symposium (NDSS)*.
- [Schulman et al., 2016] Schulman, J., Moritz, P., Levine, S., Jordan, M., and Abbeel, P. (2016). High-dimensional continuous control using generalized advantage estimation. In *Proceedings of the International Conference on Learning Representations (ICLR)*.
- [Shafahi et al., 2019] Shafahi, A., Najibi, M., Ghiasi, M. A., Xu, Z., Dickerson, J., Studer, C., Davis, L. S., Taylor, G., and Goldstein, T. (2019). Adversarial training for free! In *Advances in Neural Information Processing Systems 32*, pages 3358–3369. Curran Associates, Inc.
- [Sharif et al., 2019] Sharif, M., Bhagavatula, S., Bauer, L., and Reiter, M. K. (2019). A general framework for adversarial examples with objectives. *ACM Trans. Priv. Secur.*, 22(3):16:1–16:30.
- [Silver et al., 2016] Silver, D., Huang, A., Maddison, C. J., Guez, A., and et.al. (2016). Mastering the game of go with deep neural networks and tree search. *Nature*, 529.
- [Silver et al., 2017] Silver, D., Hubert, T., Schrittwieser, J., Antonoglou, I., Lai, M., Guez, A., Lanctot, M., Sifre, L., Kumaran, D., Graepel, T., Lillicrap, T., Simonyan, K., and Hassabis, D. (2017). Mastering Chess and Shogi by Self-Play with a General Reinforcement Learning Algorithm. *ArXiv e-prints*.
- [Silver et al., 2017] Silver, D., Schrittwieser, J., Simonyan, K., Antonoglou, I., Huang, A., Guez, A., Hubert, T., Baker, L., Lai, M., Bolton, A., et al. (2017). Mastering the game of go without human knowledge. *Nature*, 550(7676):354–359.
- [Simonyan and Zisserman, 2014] Simonyan, K. and Zisserman, A. (2014). Very deep convolutional networks for large-scale image recognition. *CoRR*, abs/1409.1556.
- [Smith and Gal, 2018] Smith, L. and Gal, Y. (2018). Understanding measures of uncertainty for adversarial example detection. In *Conference Uncertainty in Artificial Intelligence*.

- [Szegedy et al., 2014] Szegedy, C., Liu, W., Jia, Y., Sermanet, P., Reed, S. E., Anguelov, D., Erhan, D., Vanhoucke, V., and Rabinovich, A. (2014). Going deeper with convolutions. *CoRR*, abs/1409.4842.
- [Szegedy et al., 2013] Szegedy, C., Zaremba, W., Sutskever, I., Bruna, J., Erhan, D., Goodfellow, I. J., and Fergus, R. (2013). Intriguing properties of neural networks. *CoRR*, abs/1312.6199.
- [Tramèr et al., 2018] Tramèr, F., Kurakin, A., Papernot, N., Goodfellow, I., Boneh, D., and McDaniel, P. (2018). Ensemble adversarial training: Attacks and defenses. In *International Conference on Learning Representations*.
- [Xie et al., 2017] Xie, S., Girshick, R., Dollár, P., Tu, Z., and He, K. (2017). Aggregated residual transformations for deep neural networks. In *Proc. International Conference on Computer Vision and Pattern Recognition*.
- [Xu et al., 2014] Xu, Y., Mo, T., Feng, Q., Zhong, P., Lai, M., and Chang, E. I. C. (2014). Deep learning of feature representation with multiple instance learning for medical image analysis. In *Proc. IEEE Int. Conf on Acoustics, Speech and Signal Processing*.
- [Zoph and Le, 2017] Zoph, B. and Le, Q. V. (2017). Neural architecture search with reinforcement learning.
- [Zoph et al., 2018] Zoph, B., Vasudevan, V., Shlens, J., and Le, Q. V. (2018). Learning transferable architectures for scalable image recognition. In *2018 IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2018, Salt Lake City, UT, USA, June 18-22, 2018*, pages 8697–8710.