Progress Report

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1 Progress

- This week I began going through Jason Brownlee's book on machine learning with Python. It is designed for a two week course but it is only 18 pages. I might be able to finish by the end of weekend.
- Wrote two basic Python programs, using basic syntax. I will continue to use Python as much as I can so I would become intimate with the syntax, modules and pipelines.
- Read on CNN types, [1], now I understand different types of filters and how they are applied. The article provides some example applications as well.
- Read [2] and [3], it goes over basics as well.
- Began Robotic Perception course.
- Resumed Machine Learning course with Andrew Ng.

2 Plans

- Continue to learn Nolan's code.
- Need to read [4], [5], [6], and [7]; these papers seem fundamental to understanding the overall picture.
- There many common acronyms used in papers referring to known and useful algorithms. I will make list of them and begin investigating learning one by one.

- Get more comfortable with Python, Numpy, TensorFlow, and PyTorch.
- Begin working on SLAM.
- Learn ROS.

References

[1] K. Bai, "A comprehensive introduction to different types of convolutions in deep learning," Feb 2019.

[2] A. Deshpande, "A beginner's guide to understanding convolutional neural networks."

[3] A. Deshpande, "A beginner's guide to understanding convolutional neural networks part 2."

[4] C. Dong, C. C. Loy, K. He, and X. Tang, "Image super-resolution using deep convolutional networks," *CoRR*, vol. abs/1501.00092, 2015.

[5] D. Liu, Z. Wang, N. M. Nasrabadi, and T. S. Huang, "Learning a mixture of deep networks for single image super-resolution," *CoRR*, vol. abs/1701.00823, 2017.

[6] K. Doherty, D. Fourie, and J. Leonard, "Multimodal semantic slam with probabilistic data association," in *2019 International Conference on Robotics and Automation (ICRA)*, pp. 2419–2425, May 2019.

[7] F. Wang, M. Jiang, C. Qian, S. Yang, C. Li, H. Zhang, X. Wang, and X. Tang, "Residual attention network for image classification," *CoRR*, vol. abs/1704.06904, 2017.