Convolutional Neural Networks

AUTHORS: Jed Pulley & Keshav Sharan Pachipala

<u>DO NOT POLLUTE!</u> AVOID PRINTING, OR PRINT 2-SIDED MULTIPAGE.

1 Introduction

1.1 Overview

1.2 Why Do We Care?

2 But What is a Convolution?

2.1 The Discrete Case

2.2 The Continuous Case

3 NNs vs CNNs

4 Understanding the Architecture

4.1 Layers

4.2 Feature Hierarchy

5 Advanced CNN Architectures

(a) VGGNet

(b) ResNet

(c) Inception Network

6 Future Directions and Trends

(a) TO-DO

    (b) TO-DO

    (c) TO-DO

7   Resources

[1] 3Blue1Brown - But What is a Convolution?
`https://www.youtube.com/watch?v=KuXjwB4LzSA&t=1s`

[2] 3Blue1Brown - Convolutions — Why X+Y in probability is a beautiful mess
`https://www.youtube.com/watch?v=IaSGqQa5O-M`

[3] far1din - Convolutional Neural Networks from Scratch — In Depth
`https://www.youtube.com/watch?v=jDe5BAsT2-Y`

[4] Younesi, A., Ansari, M., Fazli, M. A., Ejlali, A., Shafique, M., & Henkel, J. (2024). A Comprehensive Survey of Convolutions in Deep Learning: Applications, Challenges, and Future Trends. arXiv preprint arXiv:2402.15490
`https://arxiv.org/abs/2402.15490`