ResNet-34: From research to Production

Scott Barnett, Alex Cummaudo, Rajesh Vasa

Applied Artificial Intelligence Institute
Deakin University
Melbourne, Victoria 3125, Australia

Abstract

Abstract goes in here

1. Introduction

- A gap between the 'theoretical' research and implementing this into 'practical' product.
- The transition from research into an actual product.
- **Four-step process from pre-research in NN to the 'accessible' layer**: pre-research; NN architecture paper + initial implementation; commercial implementation (industry/production grade); accessible layer (DSL that is user friendly).
- Various roles for each 'step': Scientist/Researcher; Postdoc/PhD; Library Maintainer Engineer (Domain Specific); General Developer
- Thus, various skillsets needed. What are the gaps?
- In addition, need the model and data to make it work: need all three.

2. Related work

- **Case studies** of ML implementation from pure research.
- Look at Google, Facebook, MS Research.
- Look at the 'trace' of our **implemented work** in Theia.
- Trace back paper of FaceNet and see chain of prior research ("builds upon the work of XYZ") and see which initial implementations there were (Step 2) to see varying implementations.
- Could do the same for multi-task CNN.

3. Architecture

- Go into further detail about the 4 step process.
- What are the roles and why?
- What skillsets relate to each roles (i.e. (1) Scientist/Researcher = Theoretical/Heavily Mathematical; (2) Postdoc/PhD = Partially theoretical but can hack code together; (3) Library Maintainer Engineer = A little theoretical (knows concepts of domain); (4) General Developers = Practical.
- Important to gap these skills.

4. Model

- What data is used to train the model?
- Pre-processing steps needed to 'clean' the data. How does this affect the raw data itself?

- Additional models used to train this model?
- How can I update it? Is it locked down or can I use transfer learning?

5. Data

- How do I transform it?
- Hows does this influence the pre-processing stages in the model?
- How do you create data for more training?

References