Deep learning for visual understanding

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PROPOSITIONS

pertaining to the thesis

Deep Learning for Visual Understanding

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1. Deep learning attempts to learn high-level abstractions in data by utilizing hierarchical architectures, and has shown to be successful in diverse applications [this thesis, Chapter 2].

2. A good image representation should deliver better performance without significantly increasing the computational cost [this thesis, Chapter 3 & 4].

3. The feature maps in a deep learning architecture can identify some semantically meaningful regions in images [this thesis, Chapter 4].

4. Learning concepts in a hierarchical way is consistent with human perception, and can better describe what the objects are [this thesis, Chapter 5].

5. The key to understanding the visual world is to develop a good underlying representation that is capable of recognizing objects in complex scenes.

6. The deep learning architecture can produce hierarchical data representations with an increasing level of abstraction, and we can incorporate these representations for a more comprehensive visual understanding.

7. Deep learning can potentially simulate the functioning of the human brain, which, in turn, can help the design of deep learning architectures.

8. Although deep learning has almost taken over the visual understanding research from shallow learning, they are not mutually exclusive, and can be combined for a more thorough visual understanding.

9. Scientific research benefits greatly from teamwork, and we should never take help from others for granted.

10. Doing a PhD is like chasing the love of your life. Challenging but rewarding.