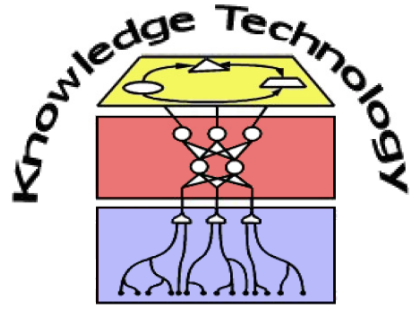
Deep Learning

Seminar: Brain Modelling

Daniel Speck
Universität Hamburg
Dept. Informatik – Knowledge Technology, WTM



http://www.informatik.uni-hamburg.de/WTM/

Outline

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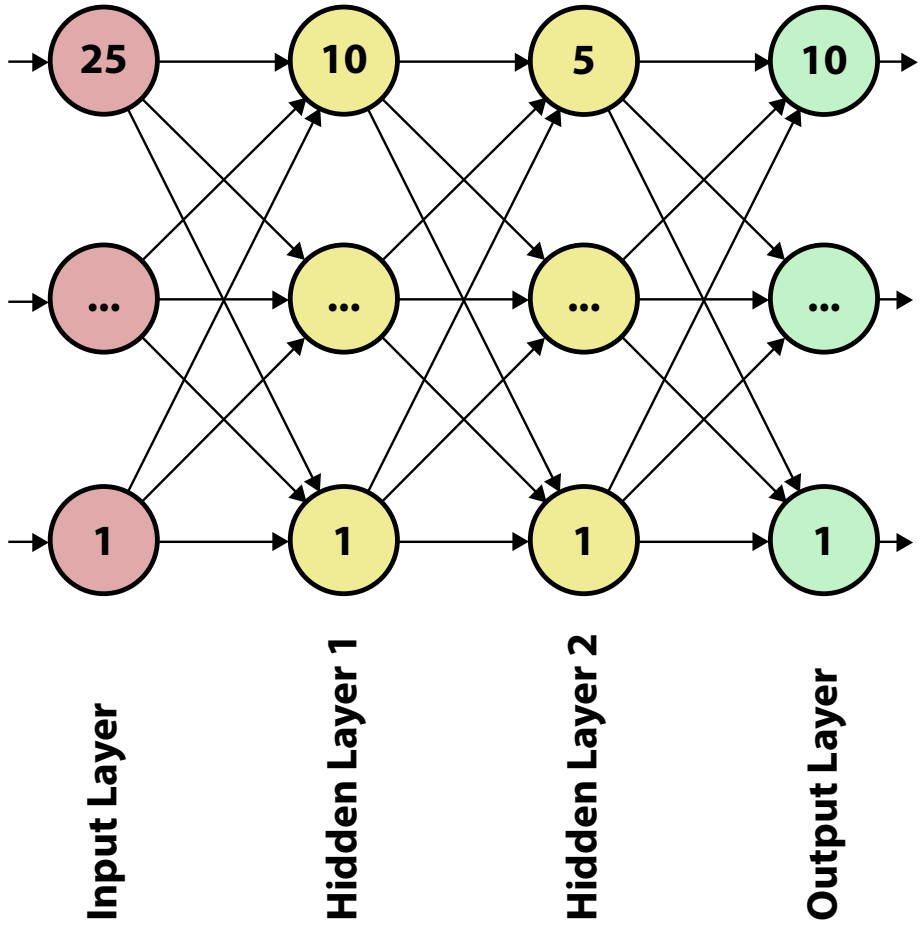
Motivation

- Artificial intelligence and neural networks
  - Analysis
  - Big data
  - Robotics
- Deep learning
  - utilizing risen computing power
  - complex tasks
  - mimic biological neural networks

Outline

Neural networks: sample figure



Kernels

- Used as filters
- Extract information out of an image via a kernel matrix
- Collect certain features

Kernels: sample figure

Figure : Michael Plotke

Subsampling

- Find representative features, ignores irrelevant information
- Shortens the information
- Reduces the dependence of features to specific areas

Convolutional neural networks

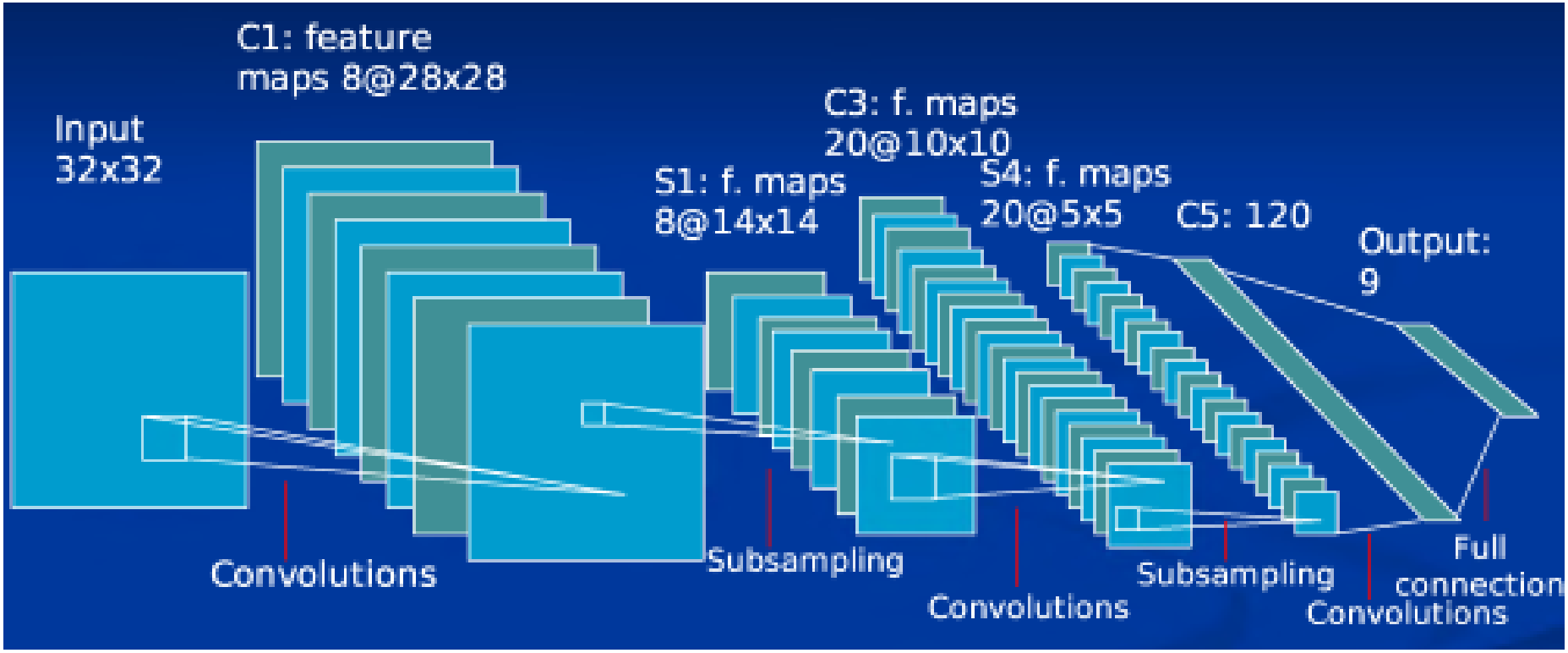


Figure : Margarita Osadchy, Matt Miller, Yann LeCun

Dropout

- Reduce overfitting
- Deactivate randomly chosen neurons with a fixed probability
- Prevent neurons of co-adapting to each other
- Mimic the behavior of biologic neural networks

Context stream and fovea stream

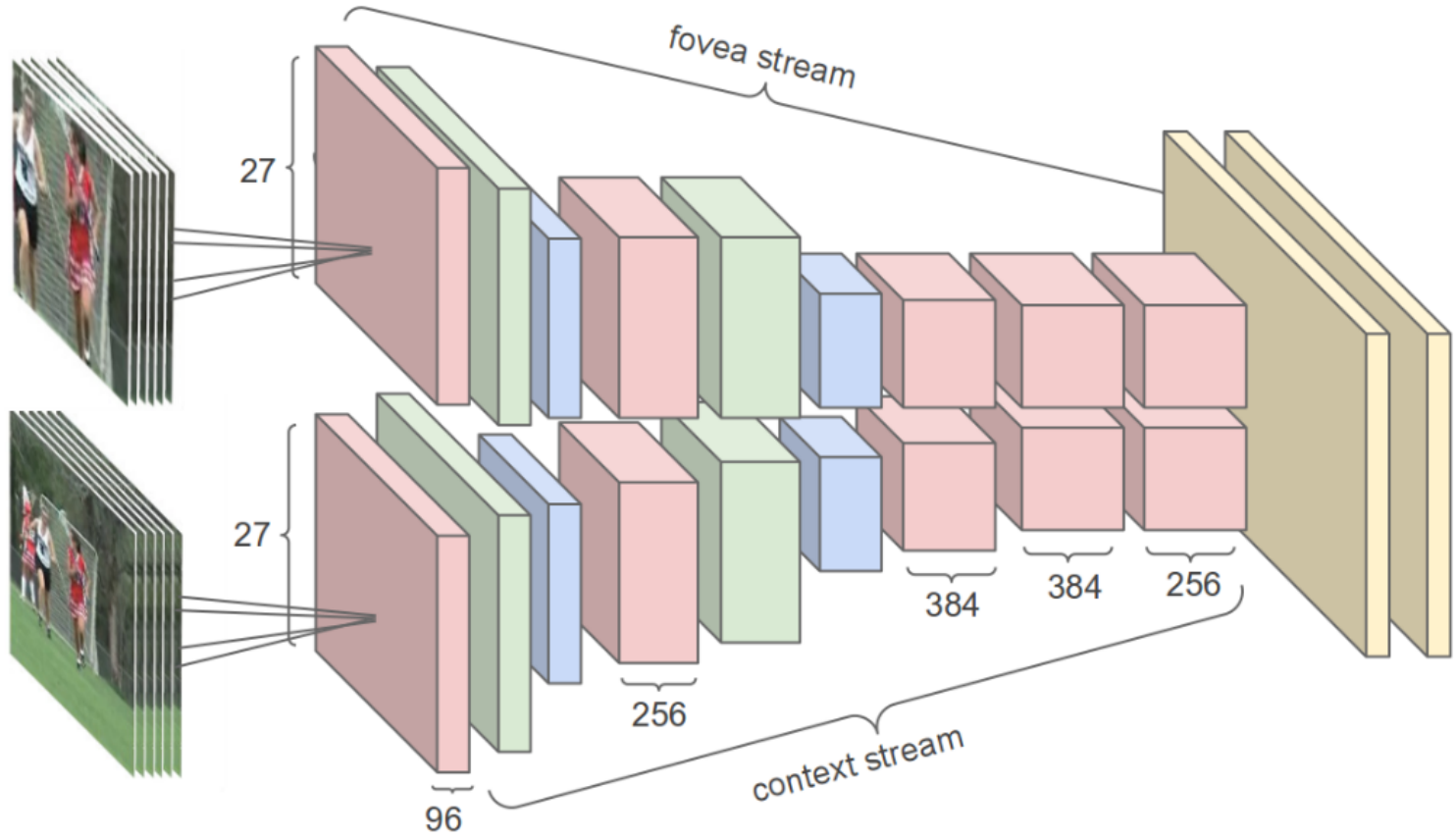


Figure : Andrej Karpathy et al.

Outline

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Conclusion

Novelty and contribution of this work:

- Sum up the approach
- Sum op the results
- ...
- Show that it solves the question

Open Questions:

- Something
- ... is always missing

The End

Thank you for your attention.

Any question?

Literature:

- Author , Author , Author, and Author. Name of the conference paper. *In: Proceedings of the Conference Name*, 2008
- Author, Author, and Author. Name of the Article. *Name of the Journal*, 42:111-133, 2010
- Author, and Author. *Name of the Book*. Publisher, 2009