

Toward a theory of transfer

Andrew Lampinen

Lightning Talk, Oct. 4th 2017

Audience participation!!!

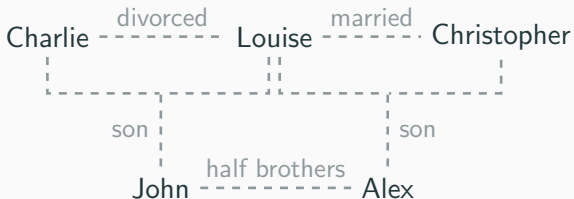
Transfer



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The human condition

The human condition



The human condition



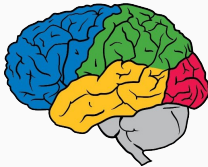
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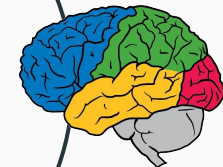


Neural nets transfer too!



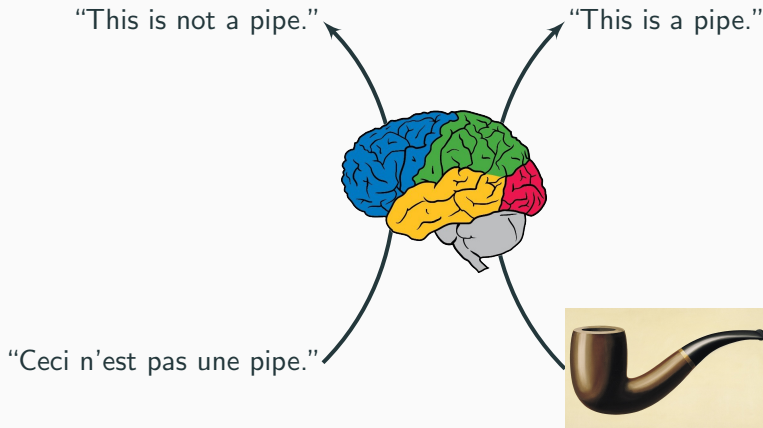
Neural nets transfer too!

"This is not a pipe."



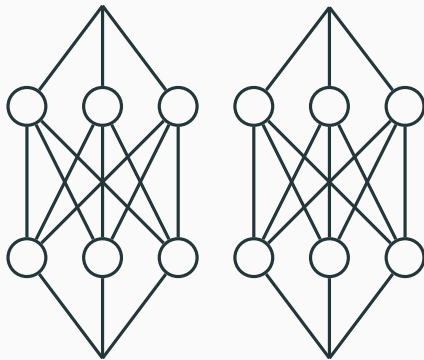
"Ceci n'est pas une pipe."

Neural nets transfer too!



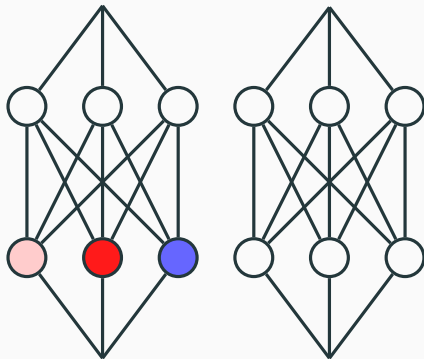
**We suggest that these are similar processes.
Can we develop a theory?**

Isomorphic tasks for neural networks



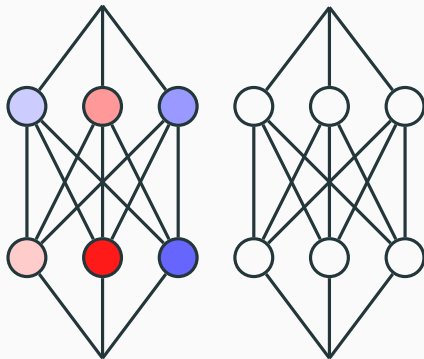
“Who are
Alexa’s parents?”

Isomorphic tasks for neural networks



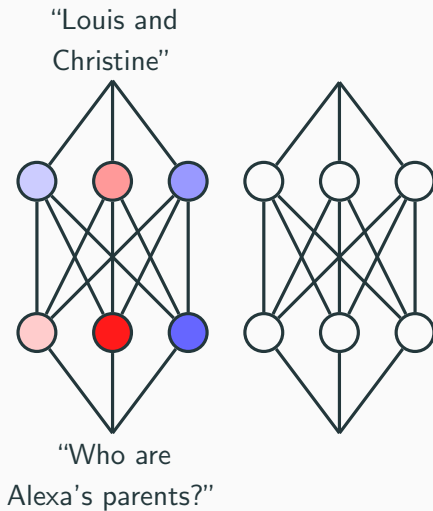
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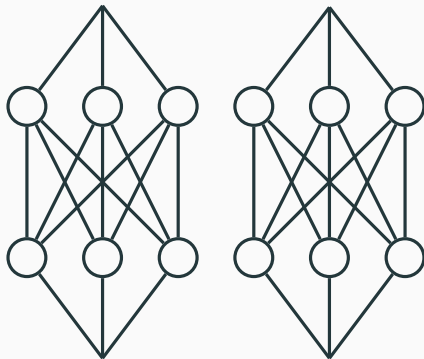


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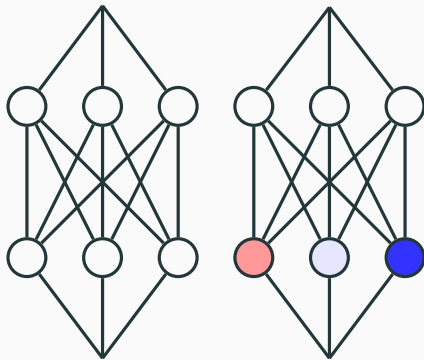


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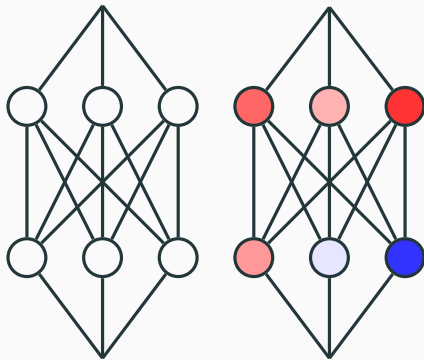
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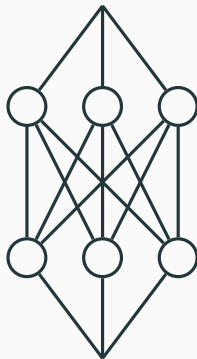
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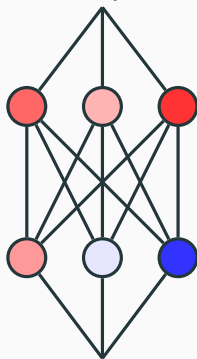


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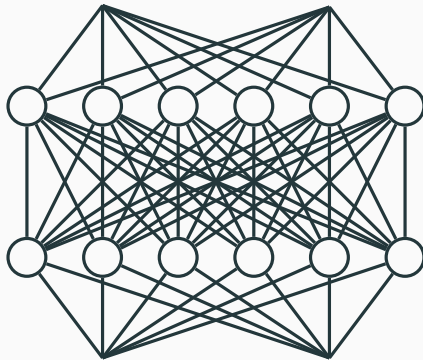


“Louise and
Christopher”

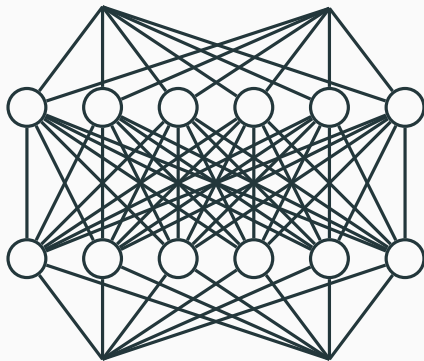


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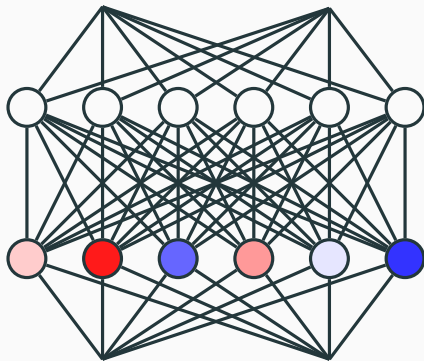


Isomorphic tasks for neural networks



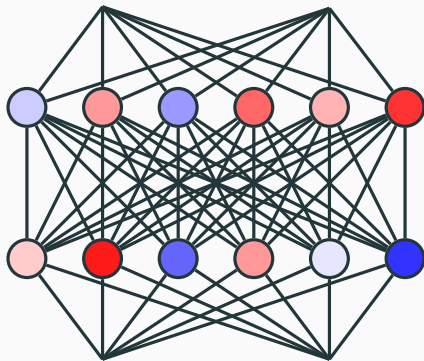
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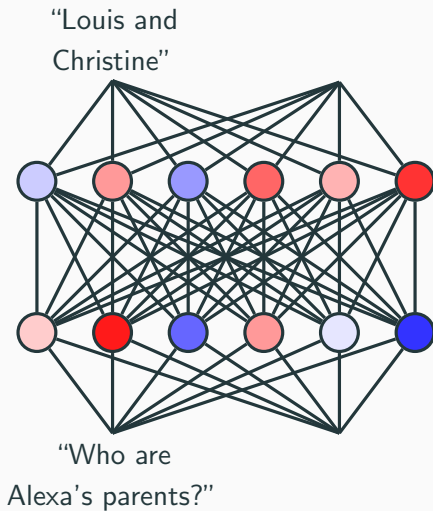
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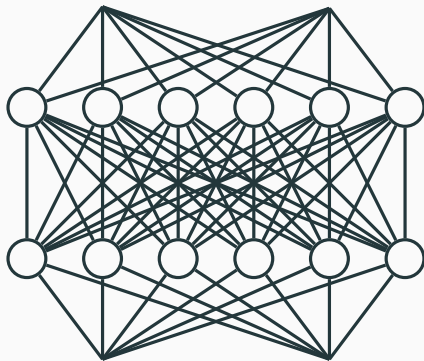


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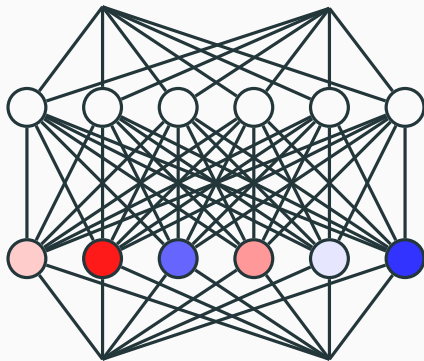


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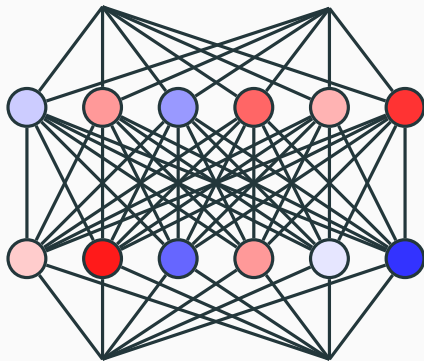
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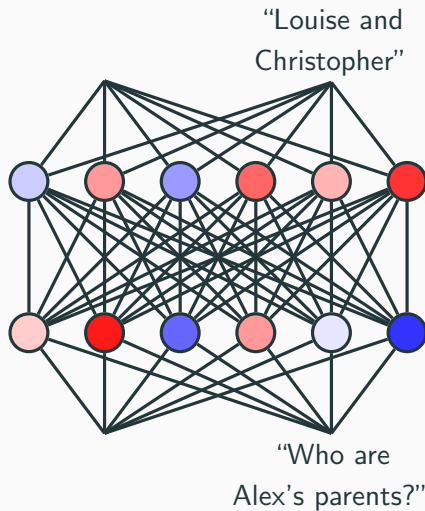
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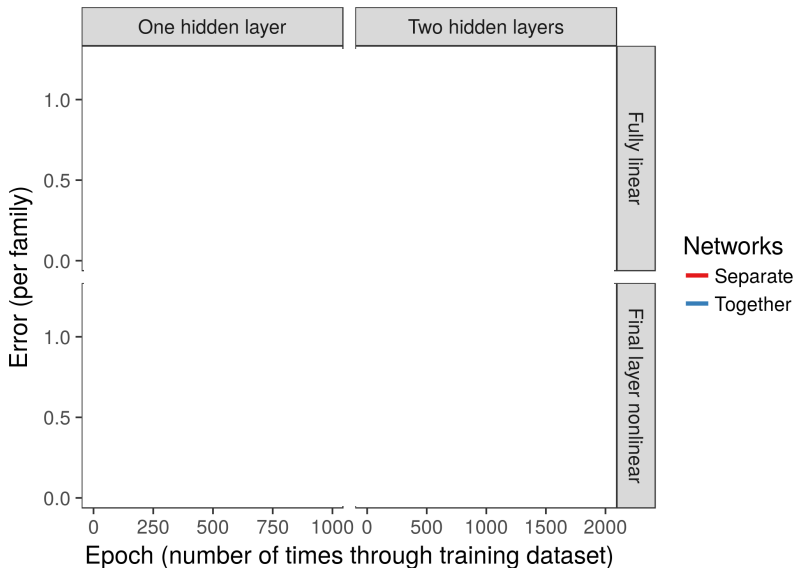


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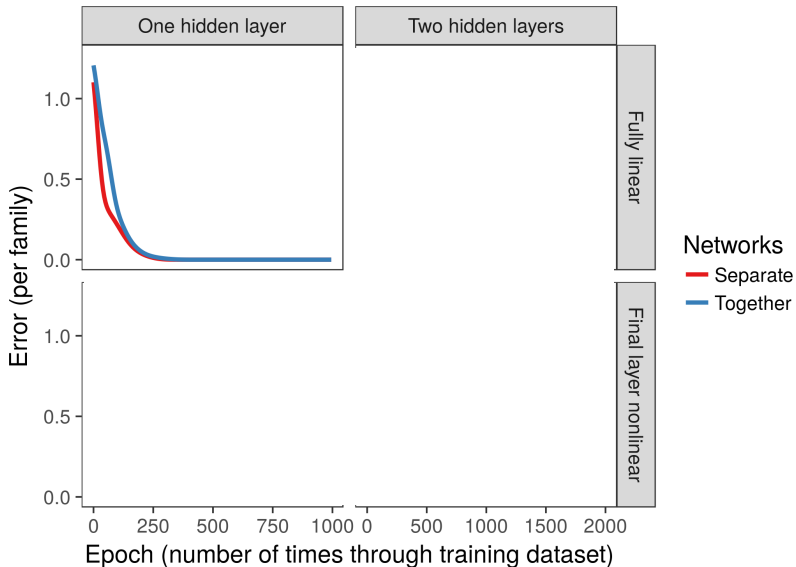
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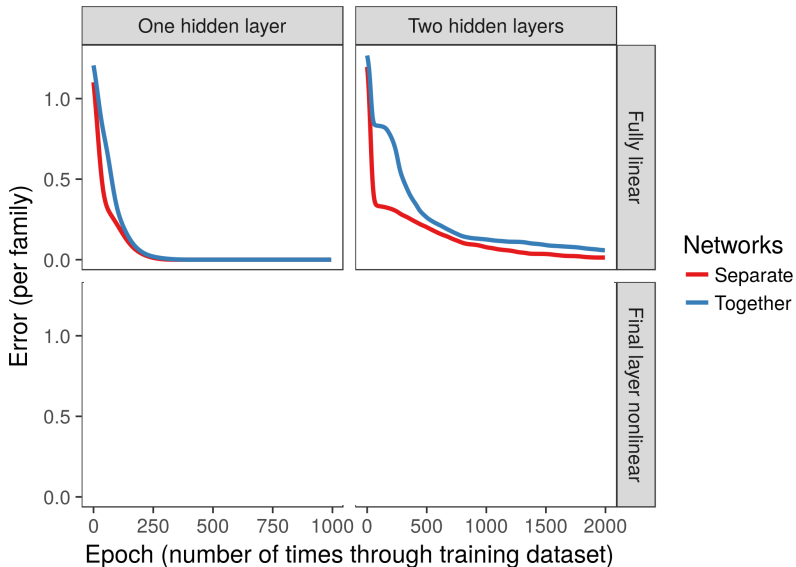
Under what conditions?



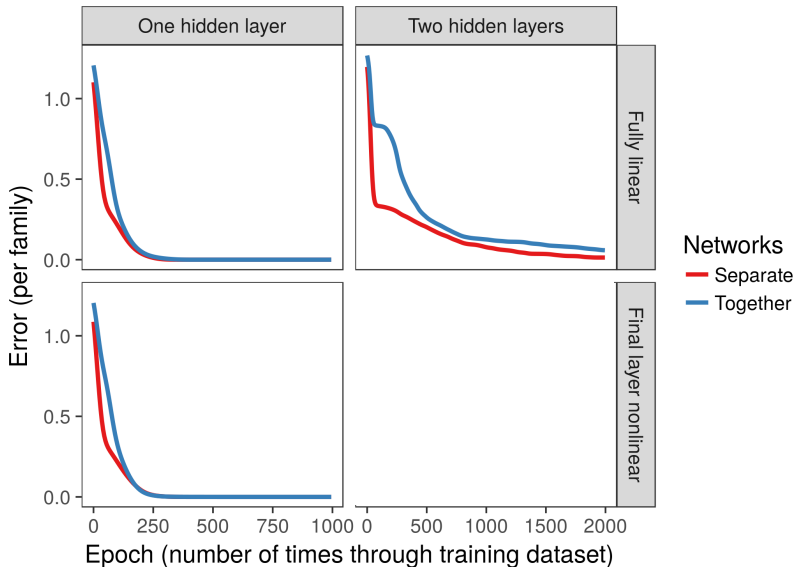
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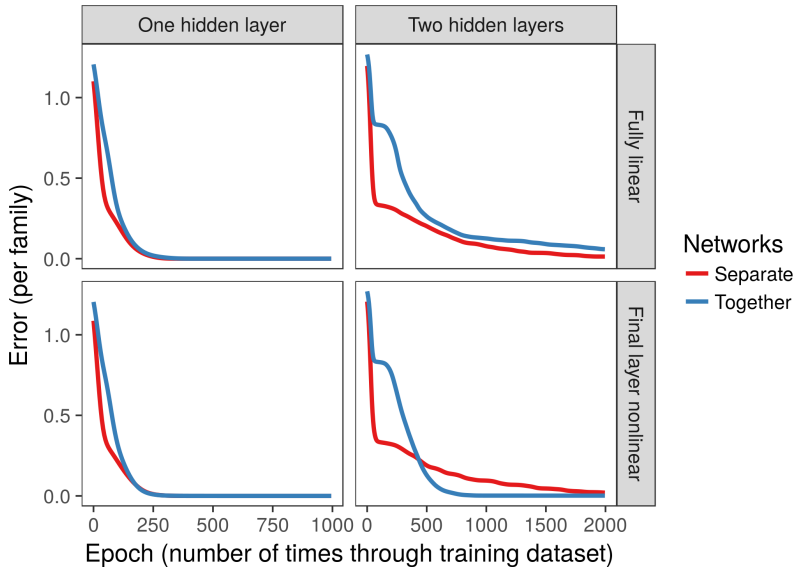
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Questions?

References

- Steven S. Hansen, Andrew Lampinen, Gaurav Suri, and James L. McClelland. Building on prior knowledge without building it in. *In press at Behavioral and Brain Sciences*, 2017.
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- Andrew Lampinen, Shaw Hsu, and James L. McClelland. Analogies Emerge from Learning Dynamics in Neural Networks. In *Proceedings of the Cognitive Science Society 2017 (Accepted)*, 2017.
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