

Tensor Memories

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Submitter Volker Tresp
Affiliation Siemens

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Presentation Abstract Summary The hippocampal memory indexing theory of Teyler and DiScenna is one of the leading theories of memory formation. The main idea is that high-dimensional latent representations are formed in the hierarchical sensory processing layers of the brain as response to sensory inputs, and that these representations are linked to indices in the hippocampal area, forming a basis for an episodic memory. We extend the hippocampal memory indexing theory by including a decoder that extracts explicit information in the form of semantic triples using latent representations of entities and predicates. We demonstrate that, if a tensor model is used for explicit decoding, a semantic memory can be derived from episodic memory by a marginalization operation. Thus, our model supports the assumption that semantic memory is derived from episodic memory and that both rely on the same latent representations of generalized entities.

Co-author Information

* Presenting Author

First Name	Last Name	Affiliation	E-mail
Volker *	Tresp *	Siemens	volker.tresp@siemens.com
Yunpu	Ma	Siemens	yunpu.ma@siemens.com
Stephan	Baier	LMU	stephan.baier@gmail.com

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