



Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

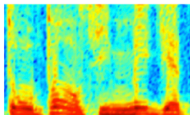
Alexander Panchenko

**FROM UNSUPERVISED INDUCTION OF
LINGUISTIC STRUCTURES FROM TEXT
TOWARDS APPLICATIONS IN DEEP
LEARNING**

Graph embeddings

Text: sparse symbolic representation

AUDIO



Audio Spectrogram

DENSE

IMAGES

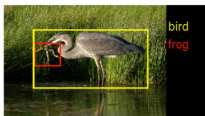


Image pixels

DENSE

TEXT

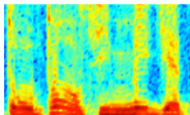
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Word, context, or
document vectors

SPARSE

Text: sparse symbolic representation

AUDIO



Audio Spectrogram

DENSE

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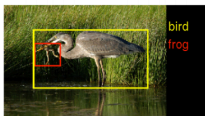


Image pixels

DENSE

TEXT

0	0	0	0.2	0	0.7	0	0	0
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Word, context, or document vectors

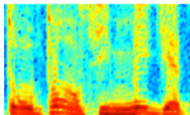
SPARSE

Image source:

<https://www.tensorflow.org/tutorials/word2vec>

Graph: sparse symbolic representation

AUDIO



Audio Spectrogram

DENSE

IMAGES

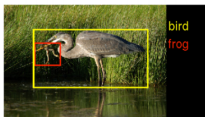
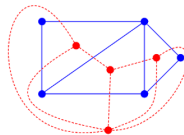


Image pixels

DENSE

GRAPH



Nodes, edges, weights

SPARSE