Word Embeddings

* How do we get discrete data like words to work with neural nets?

Movie was good $\xrightarrow{\text{BOW}}$ [0 1 0 0 0 1 0 0 0 ... 1 ...]
(was, good, movie)

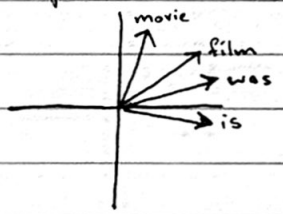
$= [0\ 1\ 0] + [0\ 1\ 0] + [0\ 1\ 0]$
(movie, was, good)

film is great $\rightarrow$ [1 ... 1 ... 1]
(film, is, great)

Orthogonal to "movie was good"
No apparent connection.
Dot product between these would be 0.

[50 - 300]

- **Word Embeddings:** Low dimensional representations of words capturing their similarity



- **How to learn Embeddings:**

JR Firth (1957) - **Distributional Hypothesis**: "You shall know a word by the company it keeps"

I watched the movie
I watched the film
The film inspired me
The movie inspired me

'Movie' and 'Film' might be similar b/c they're used in similar contexts

- Mikolov et al. (2013) - "**Word2vec**"

Each word → $\bar{v}_w$ word vector
Each word → $\bar{c}_w$ context vector

Predict each word's context given that word