Distributional Models for Lexical Semantics
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Assignment 2 (due by email to denis.paperno@gmail.com on 6.09.2017)

The cooccurrence matrix from Assignment 1

	crowned	says	knighthood	delivery	child
woman	10	82	0	4	275
queen	85	5	4	0	8
king	237	20	4	1	9
man	11	181	1	34	138

has been decomposed as

					crowned	says	knighthood	delivery	child
woman	49	-6	*		1,1	1,9	0,025	0,3	2,5
queen	8,1	-0,28			11	0,17	0,24	1,3	-26
king	35	2,7							
man	81	2,5							

1. What kind of information do the 2-dimensional word vectors encode ? Can you give interpretation to individual dimensions ?

2. Reconstruct the 5-dimensional vector of *woman* from the decomposition above. How accurate is the reconstruction ? Do you find the reconstruction errors significant ?

3 (optional). Assume a linear function that maps a vector of a semantically masculine noun to the corresponding feminine noun, e.g. *king* to *queen*. Based on the 2-dimensional vectors for *king*, *queen*, *man*, and *woman*, estimate the matrix that encodes that function.