

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Lexical association . . . . .	1
1.1.1	Collocational association . . . . .	2
1.1.2	Semantic association . . . . .	2
1.1.3	Cross-language association . . . . .	3
1.2	Motivation and applications . . . . .	4
1.3	Goals and objectives . . . . .	6
<b>2</b>	<b>Theory and Principles</b>	<b>11</b>
2.1	Notion of collocation . . . . .	11
2.1.1	Lexical combinatorics . . . . .	11
2.1.2	Historical perspective . . . . .	12
2.1.3	Diversity of definitions . . . . .	14
2.1.4	Typology and classification . . . . .	18
2.1.5	Conclusion . . . . .	22
2.2	Collocation extraction . . . . .	23
2.2.1	Extraction principles . . . . .	23
2.2.2	Extraction pipeline . . . . .	26
2.2.3	Linguistic preprocessing . . . . .	26
2.2.4	Collocation candidates . . . . .	28
2.2.5	Occurrence statistics . . . . .	31
2.2.6	Filtering candidate data . . . . .	33
<b>3</b>	<b>Association Measures</b>	<b>39</b>
3.1	Statistical association . . . . .	39
3.2	Context analysis . . . . .	43
<b>4</b>	<b>Reference Data</b>	<b>49</b>

4.1	Requirements . . . . .	49
4.1.1	Candidate data extraction . . . . .	49
4.1.2	Annotation process . . . . .	50
4.2	Prague Dependency Treebank . . . . .	51
4.2.1	Treebank details . . . . .	51
4.2.2	Candidate data sets . . . . .	53
4.2.3	Manual annotation . . . . .	56
4.3	Czech National Corpus . . . . .	58
4.3.1	Corpus details . . . . .	59
4.3.2	Automatic preprocessing . . . . .	59
4.3.3	Candidate data set . . . . .	61
4.4	Swedish PAROLE corpus . . . . .	61
4.4.1	Corpus details . . . . .	62
4.4.2	Support-verb constructions . . . . .	62
4.4.3	Manual extraction . . . . .	63
<b>5</b>	<b>Empirical Evaluation</b>	<b>65</b>
5.1	Evaluation methods . . . . .	65
5.1.1	Precision-recall curves . . . . .	66
5.1.2	Mean average precision . . . . .	68
5.1.3	Significance testing . . . . .	70
5.2	Experiments . . . . .	70
5.2.1	Prague Dependency Treebank . . . . .	71
5.2.2	Czech National Corpus . . . . .	73
5.2.3	Swedish PAROLE Corpus . . . . .	74
5.3	Comparison . . . . .	76
<b>6</b>	<b>Combining Association Measures</b>	<b>79</b>
6.1	Motivation . . . . .	79
6.2	Methods . . . . .	79
6.2.1	Linear logistic regression . . . . .	80
6.2.2	Linear discriminant analysis . . . . .	81
6.2.3	Support vector machines . . . . .	81
6.2.4	Neural networks . . . . .	81

6.3 Experiments . . . . .	82
6.3.1 Prague Dependency Treebank . . . . .	83
6.3.2 Czech National Corpus . . . . .	84
6.3.3 Swedish PAROLE Corpus . . . . .	85
6.4 Linguistic features . . . . .	86
6.5 Model reduction . . . . .	87
6.5.1 Algorithm . . . . .	88
6.5.2 Experiments . . . . .	89
<b>7 Conclusions</b>	<b>93</b>
<b>A MWE 2008 Shared Task Results</b>	<b>97</b>
A.1 Introduction . . . . .	97
A.2 System overview . . . . .	97
A.3 German Adj-Noun collocations . . . . .	99
A.3.1 Data description . . . . .	99
A.3.2 Experiments and results . . . . .	99
A.4 German PP-Verb collocations . . . . .	100
A.4.1 Data description . . . . .	100
A.4.2 Experiments and results . . . . .	100
A.5 Czech PDT-Dep collocations . . . . .	102
A.5.1 Data description . . . . .	102
A.5.2 Experiments and results . . . . .	103
A.6 Conclusion . . . . .	103
<b>B Complete Evaluation Results</b>	<b>105</b>
B.1 <i>PDT-Dep</i> . . . . .	106
B.2 <i>PDT-Surf</i> . . . . .	107
B.3 <i>CNC-Surf</i> . . . . .	108
B.4 <i>PAR-Dist</i> . . . . .	109
<b>Summary</b>	<b>111</b>
<b>Bibliography</b>	<b>113</b>
<b>Index</b>	<b>127</b>