

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>A survey on obstacles and difficulties of practical implementation of horizontal collaboration in logistics</b>	<b>4</b>
2.1	Introduction . . . . .	5
2.2	Collaboration in logistics . . . . .	7
2.3	A Taxonomy for the practical issues . . . . .	9
2.3.1	Design . . . . .	11
2.3.2	Planning and operations . . . . .	13
2.3.3	Business/market . . . . .	15
2.3.4	Behaviors . . . . .	16
2.3.5	Summary . . . . .	17
2.4	Concluding remarks . . . . .	19
<b>3</b>	<b>Coalition formation in collaborative transportation with competing firms</b>	<b>20</b>
3.1	Introduction . . . . .	21
3.2	The proposed approach . . . . .	23
3.2.1	Problem definition and assumptions . . . . .	23
3.2.2	Computing the utilities of the coalitions . . . . .	24
3.2.3	Coalition structure models . . . . .	28
3.3	Numerical experiments . . . . .	30
3.3.1	An illustrative example . . . . .	30
3.3.2	A Swedish forestry case study . . . . .	35
3.3.3	Improving computing times: a branch and cut algorithm and an heuristic solution approach for PCSP . . . . .	38
3.4	Concluding remarks . . . . .	41
<b>4</b>	<b>Real-time crash prediction in an urban expressway using disaggregated data</b>	<b>45</b>
4.1	Introduction . . . . .	46
4.2	Data set and preparation . . . . .	48
4.3	Variable selection . . . . .	52
4.4	Classification method: Support vector machines . . . . .	56
4.5	Classification method: Logistic regression . . . . .	60
4.6	Robustness and model comparisons . . . . .	64
4.7	Concluding remarks . . . . .	66

**5 Final comments**

**69**

**Bibliography**

**70**