

List of Tables

1.1	Comparison of SRS, MRS, MWSN	6
2.1	Comparison of time synchronization protocols	24
2.2	Comparison of popular ILS technologies and techniques [59].	33
2.3	Performance comparison of Ultrasonic beacon based ILS systems.	35
3.1	Swarm-Sync framework- Summary of message types and operational modes . . .	55
3.2	Average Time offset (in μs) between slave nodes and reference node N_1 , after initial time offset compensation	64
3.3	Synchronization error between slave nodes and reference node N_1 utilizing - Swarm-Sync framework	76
3.4	Comparison of Swarm-Sync with other time synchronization protocols	82
4.1	Target node position calculated using Trilateration	105
4.2	Performance of FFB and CFB ANN for Stage 1 and Stage 2 for varying number of neurons in hidden layer.	119
4.3	Performance of Stage 1 and Stage 2 ANN for different learning algorithms	119
4.4	ILB block iteration for Test 1	128
4.5	ILB block iteration for Test 4: Example 1	129
4.6	ILB block iteration for Test 4 : Example 2	129
4.7	ILB block iteration for Test 4 : Example 3	130
5.1	Parameters for input and output membership functions	151
5.2	Rules for Sugeno Fuzzy Inference System	151
5.3	Output state determined by the Activity Correlation unit	152
6.1	List of Abbreviations	167
6.2	Modelling of Simulation Scenario 1 in ARGoS.	175
6.3	Task Announcement sequences/round for Application Scenario 1.	176
6.4	Robot Allocation for Application Scenario 1.	178
6.5	Comparison of complexity of different task allocation schemes	182