

# Contents

<b>List of Figures</b>	<b>vii</b>
<b>List of Tables</b>	<b>ix</b>
<b>List of Abbreviations</b>	<b>xi</b>
<b>1 Introduction</b>	<b>1</b>
<b>2 Background</b>	<b>5</b>
2.1 Reinforcement Learning . . . . .	5
2.2 Social Learning . . . . .	8
<b>3 Material and Asocial Baseline Agent</b>	<b>13</b>
3.1 CityLearn Framework . . . . .	13
3.2 Datasets . . . . .	15
3.3 Key Performance Indicators . . . . .	19
3.4 Asocial SAC Baseline Agent . . . . .	20
3.5 Demonstrator Buildings . . . . .	24
<b>4 Social Methods</b>	<b>27</b>
4.1 Imitation Learning . . . . .	27
4.2 SAC-DemoPol . . . . .	29
4.3 SAC-DemoQ . . . . .	33
4.4 MARLISA Agent . . . . .	39

<b>5 Evaluation and Outlook</b>	<b>41</b>
5.1 Evaluation on new Buildings . . . . .	41
5.2 Final Discussion . . . . .	43
5.3 Outlook . . . . .	45
<b>6 Conclusion</b>	<b>49</b>
<b>A Tables</b>	<b>51</b>
<b>B Figures</b>	<b>56</b>
<b>C Calculation of Key Performance Indicators</b>	<b>62</b>
C.1 Fossil Energy Consumption . . . . .	62
C.2 Average Fossil Share . . . . .	63
C.3 Average Fossil Share Grid . . . . .	64
C.4 1 - Used PV . . . . .	65
<b>D Algorithms</b>	<b>66</b>
<b>Bibliography</b>	<b>69</b>