
LIST OF FIGURES

2.1	I-V and P-V Curve of Various Temperature	7
2.2	I-V and P-V Curve of Various Irradiance	8
2.3	Photovoltaic Equivalent Circuit	8
2.4	Perturb & Observe Algorithm Flowchart	12
2.5	Reinforcement Learning General Scenario	13
2.6	Deep Neural Network Structure	14
2.7	Flowchart of Deep Q Network (DQN) Algorithm	16
2.8	Boost Converter Equivalent Circuit	17
2.9	Open switch Condition	17
2.10	Closed switch Condition	17
3.1	Research Flow	20
3.2	System Design Block Diagram	21
3.3	MPPT Controller Scheme	23
3.4	The DQN Structure for P&O-DQN MPPT Controller	25
3.5	Input Irradiance Signal	27
3.6	Input Temperature Signal	28
4.1	Simulink Model of The Complete System	30
4.2	P&O-DQN Output Power (blue line) & PV Output Power (orange line) . .	31
4.3	P&O Output Power (red line) & PV non-MPPT Output Power (blue line) .	32
4.4	DQN Output Power	32
4.5	P&O-DQN Output Power (blue line) & PV Output Power (orange line) . .	33
4.6	P&O Output Power (red line) & PV non-MPPT Output Power (blue line) .	34
4.7	DQN Output Power	34
4.8	P&O-DQN Output Power (blue line) & PV Output Power (orange line) . .	35
4.9	P&O Output Power (red line) & PV non-MPPT Output Power (blue line) .	36
4.10	DQN Output Power	36
4.11	The Graph of Settling Time for First Scheme	37
4.12	The Graph of Settling Time for Second Scheme	38
4.13	The Graph of Settling Time for Third Scheme	38
4.14	Chart of Oscillation Range for First Scheme	39
4.15	Chart of Oscillation Range for Second Scheme	39
4.16	Chart of Oscillation Range for Third Scheme	40
4.17	Chart of Efficiency for First Scheme	41
4.18	Chart of Efficiency for Second Scheme	41
4.19	Chart of Efficiency for Third Scheme	42
