LIST OF FIGURES

2.1	The architecture of the 1D CNN used in this study	7
2.2	The Structure of Attention Mechanism.	9
3.1	Flowchart of the overall structure of the models.	13
3.2	Location selected for weather data analysis in East Java, Indonesia. The	
	map features markers for key cities, i.e., Sumenep (red), Surabaya (purple),	
	Babadan (green), and Sempol (blue)	14
3.3	Electricity load data for the East Java area from 2021 to May 2023. The	
	plot shows the electricity load (MW) over time with highlighted background	
	colors indicating different holiday periods: Public Holidays (orange), New	
	Year (blue), and Eid celebrations (green). Each holiday period is represented	
	with a semi-transparent background to provide context on how these events	
	impact electricity consumption	15
3.4	Distribution of electricity load across different times. (a) Boxplot showing	
	the distribution of electricity load for each hour of the day. (b) Boxplot	
	displaying the distribution of electricity load for each day of the week. $\ . \ .$	15
3.5	Comparison of electricity load with weather parameters in Babadan. The	
	red line depicts the electricity load (MW), while the blue dashed lines rep-	
	resent different weather variables: SSRD, T2M, V10, D2M, U10, and TP.	
	The x-axis covers the period [month, years]	17
3.6	Results of signal decomposition using EMD. The electricity load signal has	
	been decomposed into several IMFs labeled IMF 1 to IMF 12, and residue.	
	The x-axis covers the period [month, years]	20
3.7	The CC between the IMFs and the electricity load signal. The bar plot	
	indicates that IMF-3 has the highest correlation with the electricity load,	
	followed by IMF-6 and IMF-7. IMFs with the three highest CC are shown	
	in red, while the others are shown in blue	21
3.8	Distribution of Training, Validation, and Testing Sets for Electricity Load	
	Data	22
4.1	Plotting training data, validation data, test data, and CNN model predictions	24
4.2	Electricity load forecasting results using CNN. The red line denotes the	
	electricity load, while the blue dashed line represents the CNN models	24
4.3	Plotting training and validation loss CNN	25
4.4	Plotting training data, validation data, test data, and CNN with Attention	
	Mechanism	26

4.5	Electricity load forecasting results using CNN with Attention Mechanism.	
	The red line denotes the electricity load, while the blue dashed line repre-	
	sents the CNN with AM models.	26
4.6	Plotting training and validation loss CNN with AM.	27
4.7	Plotting training data, validation data, test data, and CNN with Attention	
	Mechanism and EMD	28
4.8	Electricity load forecasting results using CNN with Attention Mechanism	
	and EMD. The red line denotes the electricity load, while the blue dashed	
	line represents the CNN AM with EMD models.	29
4.9	Plotting training and validation loss CNN with AM and EMD	29
4.10	Comparison of forecasting results among the proposed hybrid models. The	
	dashed black line denotes the actual electricity load. The dotted green line	
	represents the predictions from the CNN models. The dashed blue line	
	shows the predictions from the CNN models with Attention Mechanism.	
	The solid red line illustrates the predictions from the CNN models with	
	both Attention Mechanism and EMD	31