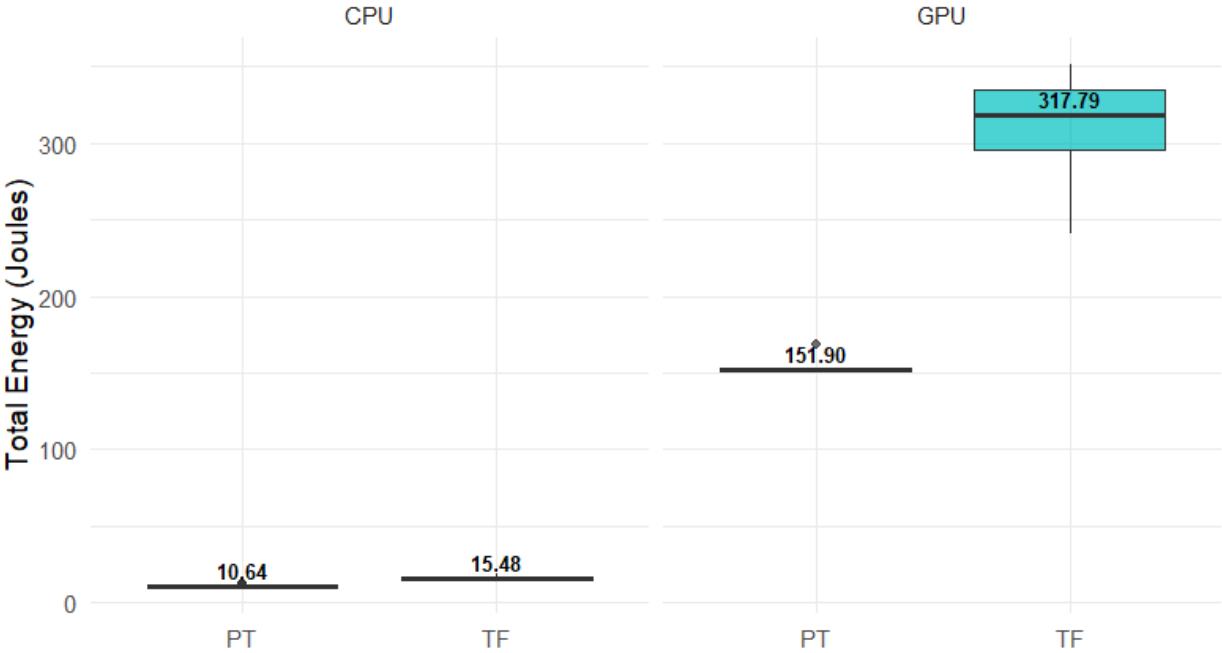


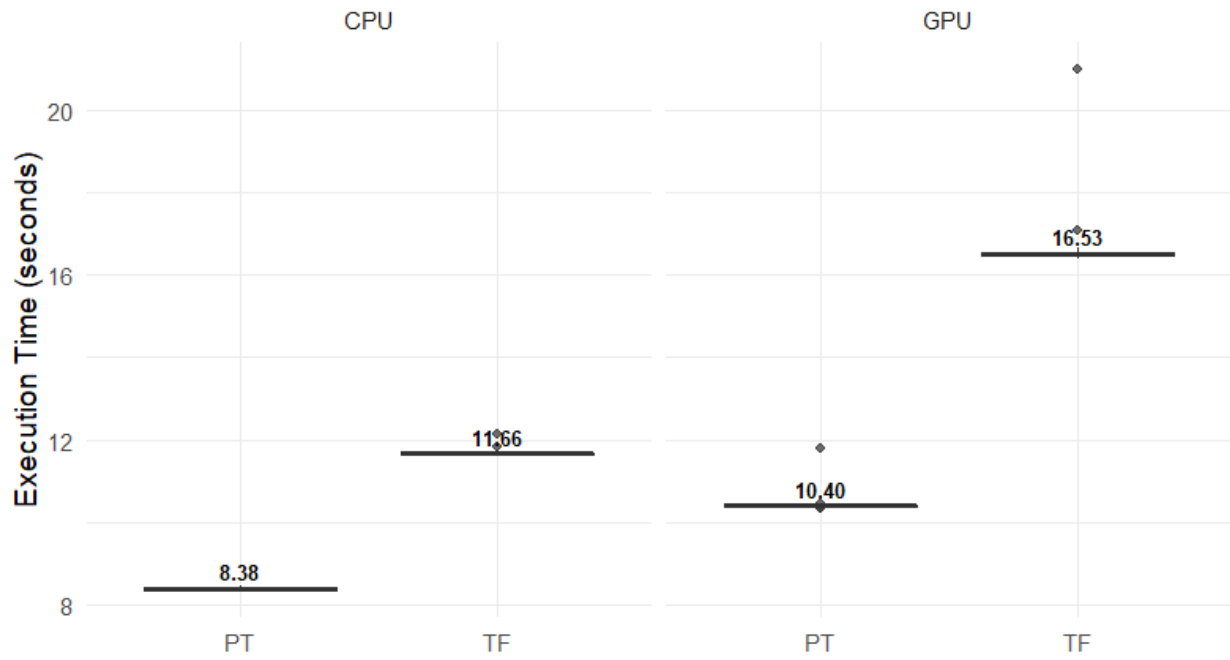
Data analysis results on the comparison TensorFlow and PyTorch on Laptop CPU and GPU

1. Box Plots and bar plots for metrics M2, M3, M4, M5

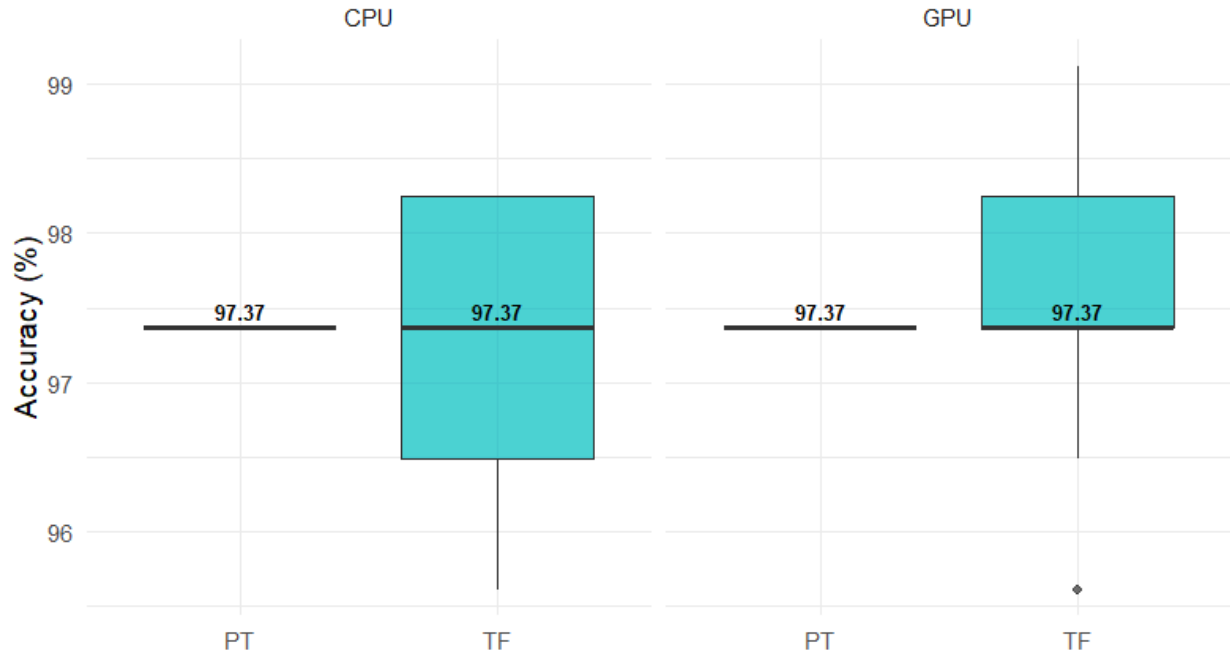
M2: Total Energy Consumption by Library and Platform



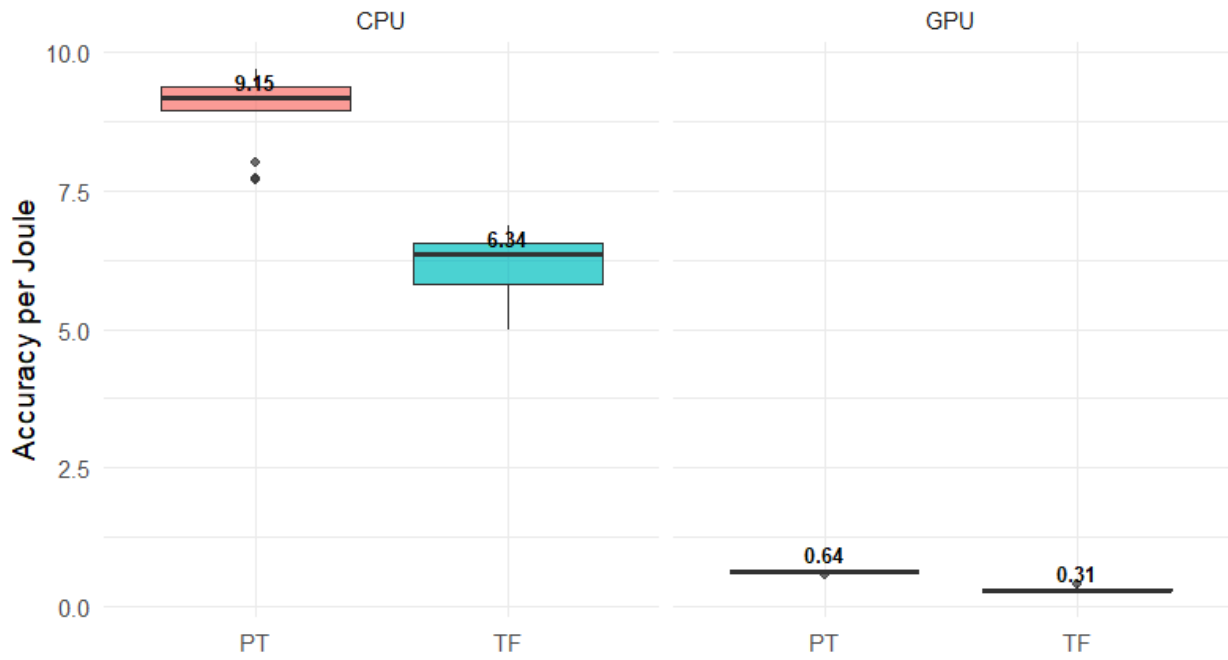
M3: Execution Time by Library and Platform



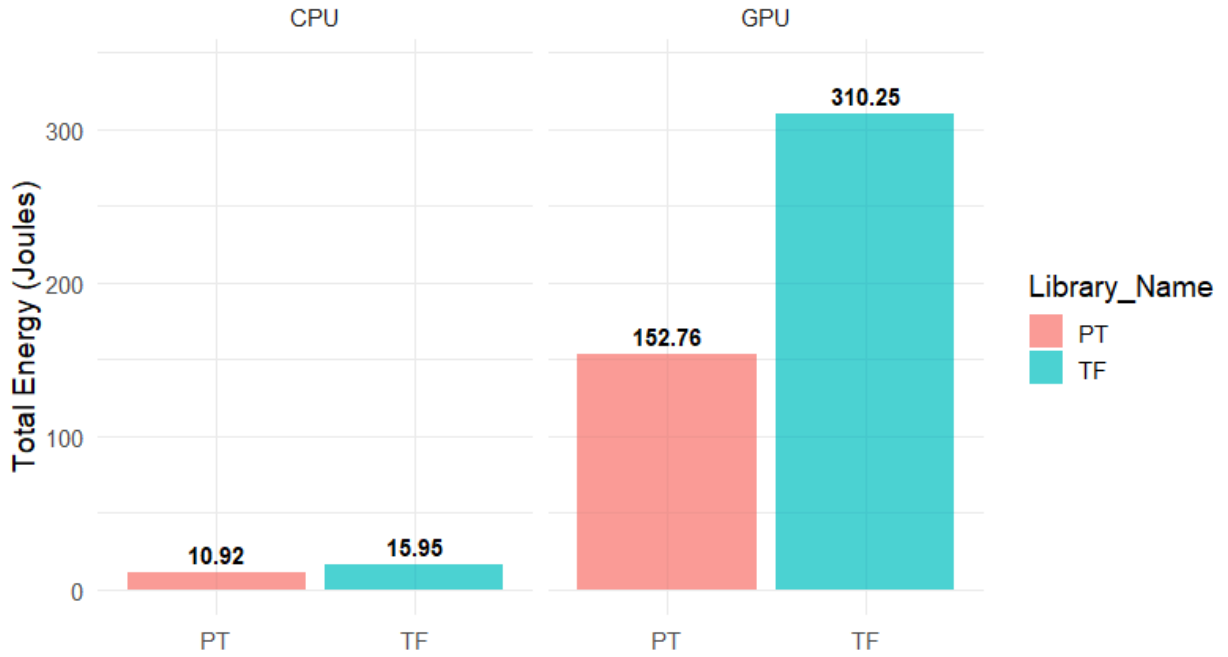
M4: Model Accuracy by Library and Platform



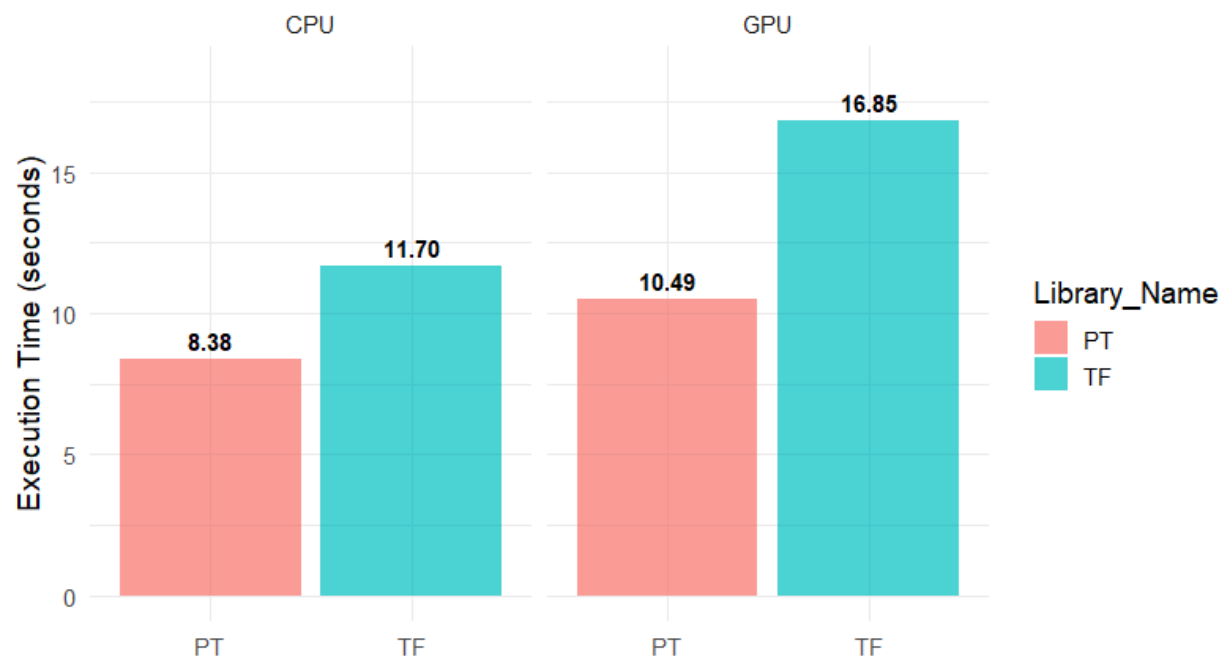
M5: Energy Efficiency Ratio by Library and Platform



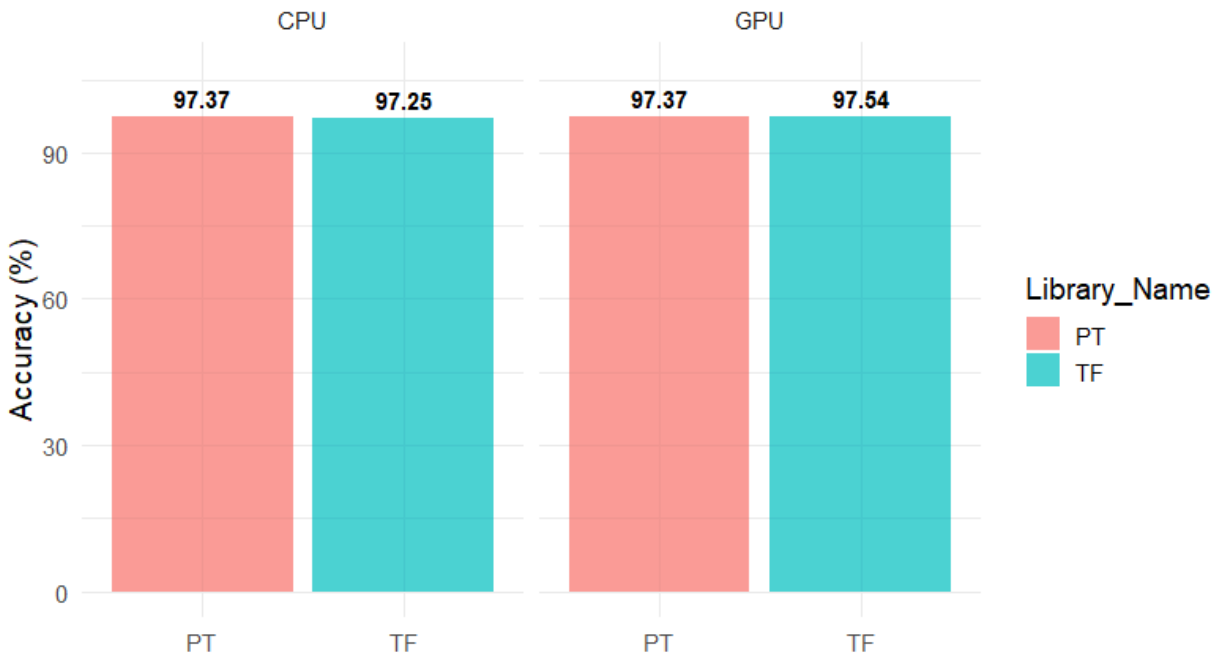
M2: Mean Total Energy Consumption



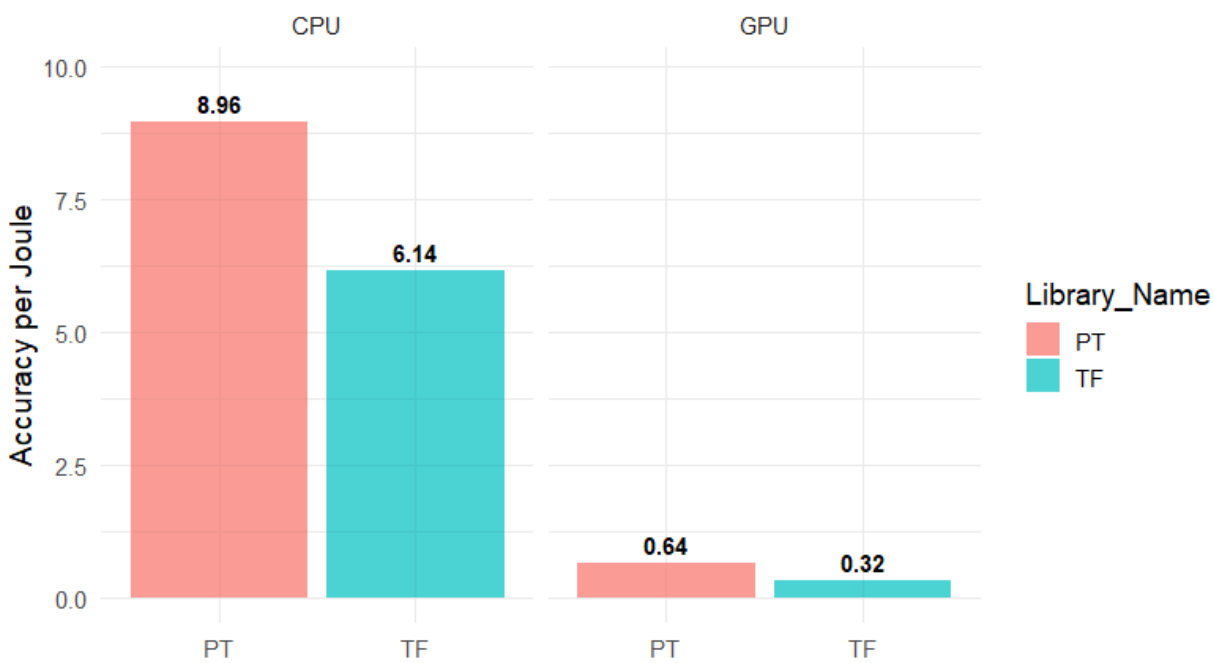
M3: Mean Execution Time



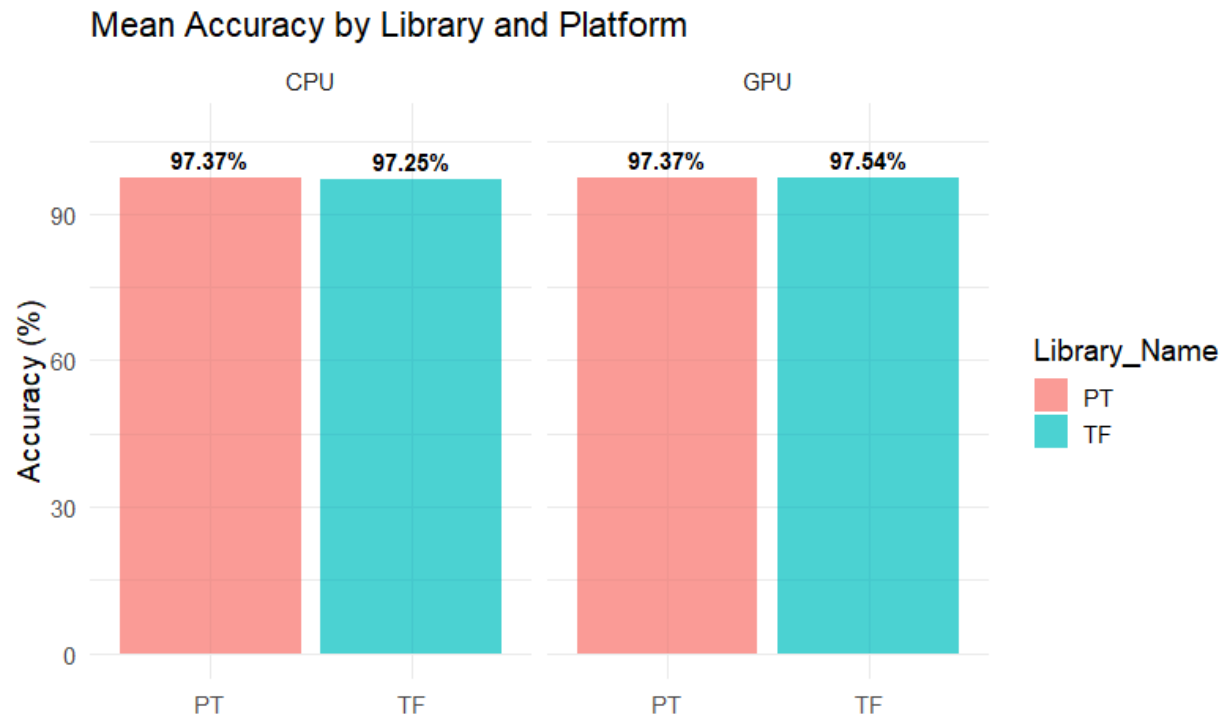
M4: Mean Model Accuracy



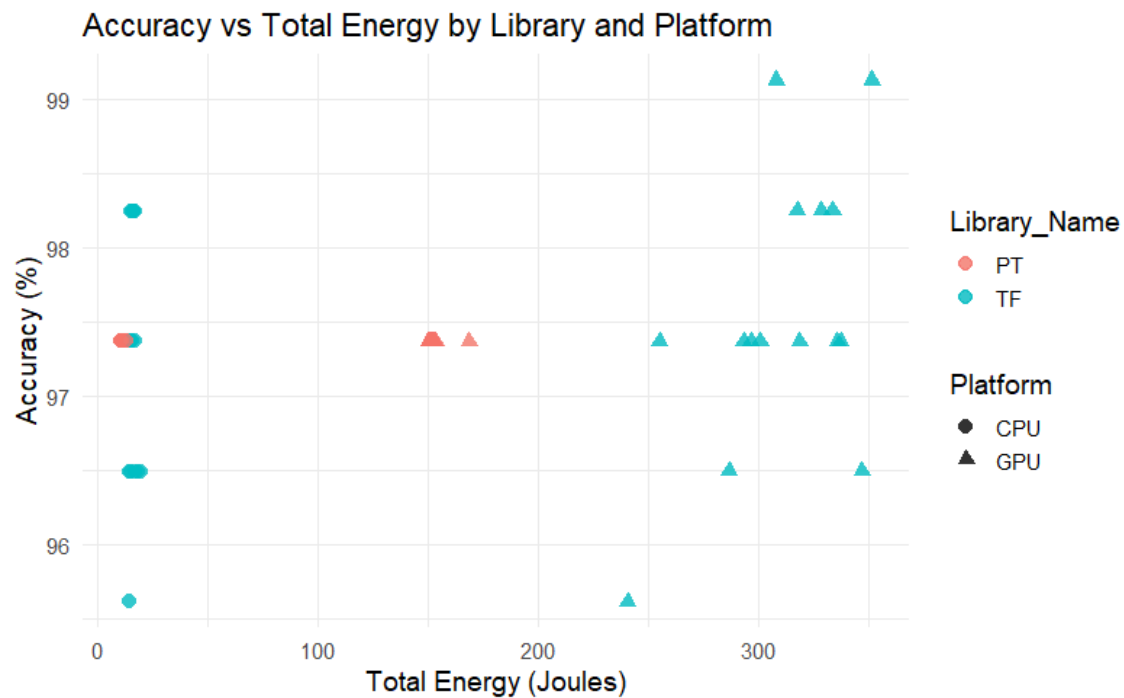
M5: Mean Energy Efficiency



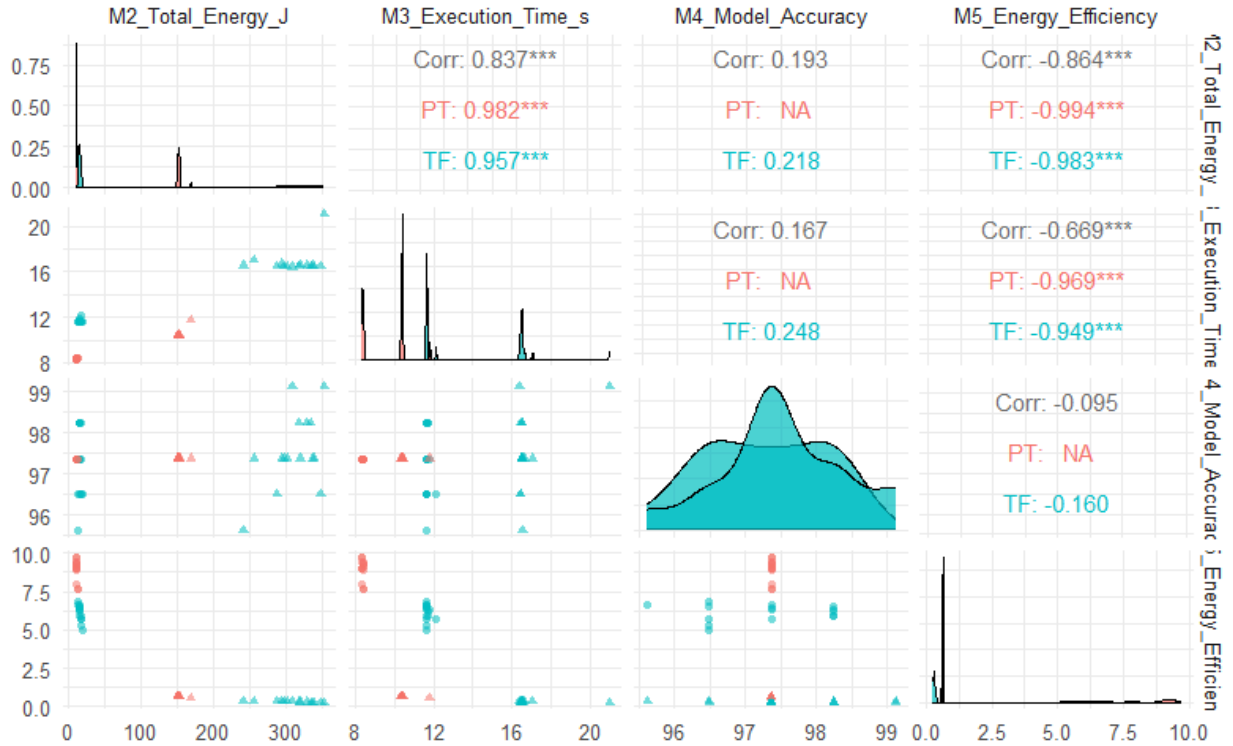
2. Average accuracy by library and platform CPU/GPU:



3. Scatter plot: Accuracy vs Total Energy by library and platform:



4. Scatter Matrix:



5. Summary table:

Platform	Library	N	Energy (J)	Execution Time (s)	Accuracy (%)	Efficiency (%/J)
CPU	PT	15	10.90	8.38	97.40	8.96
CPU	TF	15	15.90	11.70	97.30	6.14
GPU	PT	15	153.00	10.50	97.40	0.64
GPU	TF	15	310.00	16.90	97.50	0.32

6. ANOVA and Kruskal calculation for metrics M2, M3, M4, M5

- Anova:

M2: Total Energy Consumption

```

Df Sum Sq Mean Sq F value Pr(>F)
Library_Name      1  99056    99056    375.4 <2e-16 ***
Platform          1  713326   713326   2703.0 <2e-16 ***
Library_Name:Platform 1   87175    87175    330.3 <2e-16 ***
Residuals        56  14779      264

```

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

M3: Execution Time

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Library_Name	1	352.0	352.0	934.02	< 2e-16 ***
Platform	1	197.9	197.9	525.04	< 2e-16 ***
Library_Name:Platform	1	34.8	34.8	92.28	1.92e-13 ***
Residuals	56	21.1	0.4		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

M4: Model Accuracy

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Library_Name	1	0.013	0.0128	0.031	0.861
Platform	1	0.321	0.3206	0.774	0.383
Library_Name:Platform	1	0.321	0.3206	0.774	0.383
Residuals	56	23.187	0.4140		

> cat("\nM5: Energy Efficiency\n")

M5: Energy Efficiency

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Library_Name	1	37.0	37.0	210.0	<2e-16 ***
Platform	1	751.2	751.2	4263.8	<2e-16 ***
Library_Name:Platform	1	23.5	23.5	133.1	<2e-16 ***
Residuals	56	9.9	0.2		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

- Kruskal:

M2: Total Energy Consumption

data: M2_Total_Energy_J by interaction(Library_Name, Platform)
Kruskal-Wallis chi-squared = 55.328, df = 3, p-value = 5.845e-12

M3: Execution Time

data: M3_Execution_Time_s by interaction(Library_Name, Platform)
Kruskal-Wallis chi-squared = 54.123, df = 3, p-value = 1.056e-11

M4: Model Accuracy

data: M4_Model_Accuracy by interaction(Library_Name, Platform)
Kruskal-Wallis chi-squared = 1.158, df = 3, p-value = 0.7631

M5: Energy Efficiency

data: M5_Energy_Efficiency by interaction(Library_Name, Platform)
Kruskal-Wallis chi-squared = 55.328, df = 3, p-value = 5.845e-12