CHI-SQURE TEST FOR VARIANCE

INFERENTIAL STATISTICS

Prepared by:
Gyro A. Madrona
Electronics Engineer

Chi-Square Test for Variance

Data Analyst: Gyro A. Madrona
Department: Electrical Engineering

```python
# imports and packages
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from scipy import stats
```

[ ] Python

```python
# load dataset
df = pd.read_csv(r"raw\electricity-normal-sample-cleaned.csv",
                 delimiter=',')
df
```

[ ] Open 'df' in Data Wrangler — Python

```python
# summary of dataframe
df.info()
```

[ ] Python

```python
# summary of statistics
df.describe()
```

[ ] Python

```python
# boxplot
plt.figure(figsize=(10,5))
plt.boxplot(df[['Nuclear','Wind','Hydroelectric','Oil and Gas','Coal','Solar','Biomass']],
            tick_labels=df.columns)
plt.title('Production Type')
plt.ylabel('MWh')
#plt.xticks(rotation=45)
plt.show()
```

[ ] Python

Nuclear

```python
# Hypothesis
# Ho: sigma_1 <= 32.50
# Ha: sigma_1 > 32.50

# test statistic
dof = df['Nuclear'].count() - 1
sample_var = df['Nuclear'].var(ddof=1)
pop_var = np.pow(32.50,2)

chi_sq_stat = dof*(sample_var/pop_var)
chi_sq_stat
```

[ ] Python