**FYP (PD Detection) Plan**

**Main Object:**

Using Machine Learning methods for Partial Discharge detection. Trying to apply unsupervised learning methods for detection.

**Background:**

Partial Discharge is a localized dielectric breakdown of a small portion of a solid or fluid electrical insulation system under high voltage stress. It usually happens when electric signal reaches highest amplitude. And sometimes it comes with some physical phenomenon, like sounds or lightnings, that can be noticed intuitively.

The traditional methods to detect PD is extracting features by experience and then classification or clustering by ML methods like K-means, SVM, etc. This process is based on experience, and sometimes the PD might be ignored due to reasons like no intuitive phenomenon.

**Approaches:**

In this project, I am trying to use CNN and some other AI methods to detect PD. The reason why I choose CNN as my first try is that CNN is an unsupervised learning model, it is not based on experience but it will find the regular partten itself.

Also, I will working on classify PD after detection, and trying to find some other methods to do the detection and improve results.

**Weekly Plan**

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| Time | Content |
| 9.18 – 9.24 (Week 6) | PD background comprehensive and Image feature extraction research |
| 9.25 – 10.1 (Week 7) | PD background comprehensive and Image feature extraction research |
| 10.2 – 10.8 (Recess Week) | Try on K-Means to classify PDs |
| 10.9 – 10.15 (Week 8) | Try on K-Means to classify PDs |
| 10.16 – 10.22 (Week 9) | Try on CNN approaches and record result |
| 10.23 – 10.29 (Week 10) | Try on CNN approaches and record result |
| 10.30 – 11.5 (Week 11) | Get further understand on CNN |
| 11.6 – 11.12 (Week 12) | Review work done |
| 11.13– 11.19 (Week 13) | Organize Interim report |