**Session 04:-**

1. Read the research paper and summarize

| Citation | Brief | Technology | Limitation | Contribution |
| --- | --- | --- | --- | --- |
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|  |  |  |  |  |
|  |  |  |  |  |

1. Update the concept map
2. Create a diagram (kind of a tree diagram) where come up with the steps in developing the prototype? (Refer next point for sample steps)









1. Come up with steps in the prototype development

Dataset

Preprocessing

1. Cleaning the data
2. Handle the missing value
3. Normalization
   1. Step 01
   2. Step 02
4. Check data set is balanced if it is not make it balanced
5. Data Encoding
6. Split the data set into categories
7. Feature scaling

Check if there are further steps in each of them using which create the diagram that is required in point number (3).

Every part of the steps if required a technological review must be done comparing and contrasting the available choices like the table shown below:

1. Create another table to summarize the technologies (Technological Review or algorithmic review



| Algorithm (Technology) | Advantages | Disadvantages | Citation |
| --- | --- | --- | --- |
| RNN |  |  | What are the related work that has used this |
| CNN |  |  |  |
| Naïve Bayes |  |  |  |
| KNN |  |  |  |

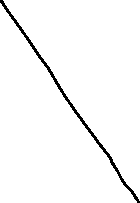
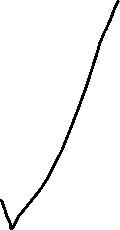
| Ensemble | Advantages | Disadvantages | Citation |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |

| Missing value handling technique | Advantages | Disadvantages | Citation |
| --- | --- | --- | --- |
|  |  |  |  |
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| Dataset balancing techniques | Adv | Dis | Citation |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |

1. Narrow to broader

(Broader)LR on similar domain



LR on problem domain



Narrow (LR on specific)

**Part 02:-**

By now you should have completed the following topics in the project proposal:

1. Existing Work
2. Research Gap
3. Contribution to BoK
   1. Problem Domain
   2. Research Domain
4. Research Challenge

What is next?

Research Question?

Make it specific and answer to these questions are going to be your research work

Let it be LR, RE, Design, Impl or testing

Example of Pubudu:

1. What are the available technology to perform data augmentation
2. How to automate data augmentation that will outperform the manual data augmentation process
3. What are potential challenges in automating data augmentation

Example of Navin:

1. What are current adaptive and non-adaptive approaches taken to develop companion AI in video games
2. What are current difficulties faced and opportunities available in when using ML to develop companion AI
3. What are current difficulties faced and opportunities available in when using player modeling techniques to develop companion AI
4. How to develop a novel training method or an algorithm using the available technologies to effectively develop adaptive companion AI for video games

Research Aim

The aim of the project is to **design, develop and evaluate** a system that can automate the data augmentation which will outperform the manual data augmentation process.

The aim of the project is to design, develop and evaluate an ensemble model of image augmentation and image processing that will perform better in predicting emphysema disease comparing to existing models

Further elaborate on the aim

Research Objectives

| Objectives | Description | Learning outcome | Research Questions |
| --- | --- | --- | --- |
| Literature Review | RO1:  RO2:  RO3:  RO4:  RO5: | LO1, LO4, LO8 |  |
| Methodology Selection and SLEP Framework |  | L02, L06, LO8 |  |
| Requirement Elicitation |  | LO1, LO3, LO5, LO8 |  |
| Design |  | LO1, LO5, LO8 |  |
| Implementation |  | LO1, LO5, LO7, LO8 |  |
| Evaluation |  | LO1, LO5, LO8 |  |

Project Scope:

In scope

Out scope

Diagram depicting prototype feature