

**Foundations of Artificial Intelligence**

***Project Title***

***Team number***

*Team Members*

AI 801 (Foundations of Artificial Intelligence)

[Semester,Year]

**Document Control**

**Work carried out by:**

| **Full Name** | **Email Address** | **Exhaustive list of Tasks** |
| --- | --- | --- |
|  |  | Add individual contributions. |
|  |  |  |
|  |  |  |

**Revision Sheet**

| **Date** | **Revision Description** |
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*“Artificial Intelligence is an ecosystem multi-disciplinary concepts, techniques, and tools (Machine learning, NLP, Computer vision, logic-based systems, expert systems, planning and scheduling, multi-agent systems, multi-task learning, game theory, decision support system, etc.). It is obvious that no single project template can cover all AI problems.*

*This template outlines a typical AI project and should be customized and adapted to the scope of your project, and its expected deliverables.”*

# Introduction

[Enter Text Here.]

* Should state the background of your problem

# Problem Statement

[Enter Text Here.]

* Should state your problem statement

# Challenges

[Enter Text Here.]

* What are the challenges (business challenges, data and predictive analytics challenges?

## RELATED WORKS

[Enter Text Here.]

* Is the dataset already used in other projects?
* Introduce related projects and how your project and your solution differ from existing projects?
* Cite and add references to scientific **papers** and **journals** related to your project and explain how their works differ from your contributions and findings. You can search the following databases through the **PSU libraries**: <https://libraries.psu.edu/databases>
  + ACM
  + IEEE
  + Springer
  + Elsevier
  + Web of Sciences
  + Google Scholar

## IMPORTANCE AND IMPACTS

[Enter Text Here.]

* Should state why you do think that your research question or the project problem is important?
* Does it have any social/ economic/business/ scientific impact?

# Data Collection and Preprocessing

[Enter Text Here.]

* In case your project uses machine learning to learn from historical data, data collection process should cover (but not limited to) the following topics:
* **Data collection**
  + Should mention the data source and the context in which the data is collected.
  + Explain how your data is pertinent to your research question.
  + Apply a Data Exploratory Analysis
    - Give a snapshot of your data: feature description, types(categorical, continuous variables, ..)
    - Preprocess features: missing values, skewness, type conversions, outliers, ..
    - Visualize data (histograms, scatterplots, correlation, …)
    - Interpret and explain your data
  + …
* **Data preprocessing** 
  + Apply descriptive statistics: means, std, min, max, range, ..
  + Preprocess features: skewness, type conversions,
  + Detect any inconsistency/ missing values in the data.
  + You should mention whether scaling/ normalization / transformation of the features are required. If it is, then what you have done.
  + Detect outliers, imbalanced or any inconsistent data, ….
  + Check correlations and linearity., interpret your results ?
  + Visualize and plot graphs/curves in support of your result..
  + Interpret and explain your data
  + Data Augmentation
  + Data normalization and standardization, …
  + …

# Methodology

[Enter Text Here. ]

* Should mention what methodology (ies) you have used in your project.
* Explain and justify the choice of your models
  + Why do you choose this(ese) model(s)?
* How good is it (are they) in solving your problem?
* How do you compare your models to select the optimal solution?
* Mention about the assumption/constraints you consider while applying the method on your data.
* State what software/[Database] you have used

# Results and INterpretation

[Enter Text Here.]

* Interpret and explain the outcome of your models (coefficients, parameters, errors, etc...)
* Model performance and evaluations
  + Interpret and explain your results in terms
  + Add plots and interpret them
* You should provide the necessary tables that summarize your results and add charts.
* Figures, graphs/curves in support of your result.
* …

# Discussion of Results

[Enter Text Here]

* Discuss your results and its usefulness in solving your chosen problem.
* What will be the practical implication of your result (i.e. social/economic/commercial/scientific benefits) in society?
* What are the limitations (if any)?
* What would be the future work?
* What are the limits of your regressors or classifiers? What are your suggestions to improve them in the future?

# Your Feedback

[Enter Text Here]

* Feel free to share your feedback and thoughts about the final project terms and provide your positive feedback and suggestions to improve this project objectives.
* **…**

# References

[Enter Text Here].

* Add papers/publications/white papers citations.
* Add the links of the data/software you downloaded and when you visit them
* Add the relevant webpages/blogs you take help from.