FYP Topic

Khawaja Afnan Asif 21L-1864

Mohammad Waqar 21L-7729

Abdullah Tahir 21L-5419

**How Neural Networks Mimic the Brain**

• Problem Statement: The problem addressed in this study is the need to understand and explore the extent to which machine learning and neural networks emulate the information processing and learning capabilities of the human brain. This problem statement aims to investigate the similarities and differences between artificial neural networks and the biological neural networks found in the human brain. The objective is to gain insights into the degree of mimicry and identify the practical implications of these parallels in fields like AI, neuroscience, and cognitive science.

• Research Methodology: To address this problem, the research will employ a multi-faceted methodology. It will involve a comprehensive literature review to identify key theories and findings related to neural network modeling and biological neural networks. Additionally, the research will conduct comparative analyses, utilizing computer simulations and modeling to demonstrate how artificial neural networks can approximate biological neural processes.

• Sources of Primary Data: The primary data sources for this research project will include:

a. Simulated Models: Artificial neural network models can be designed and simulated to illustrate how they mimic the functions of biological neurons. These models will be used to perform experiments that investigate the capacity of neural networks to replicate certain aspects of neural information processing.

b. Expert Interviews: In-depth interviews will be conducted with experts in the fields of machine learning, neuroscience, and cognitive science. These interviews will provide qualitative data on the parallels and distinctions between artificial neural networks and the human brain, as well as the practical implications and applications of these similarities.