DEPARTMENT OF APEX INSTITUTE OF TECHNOLOGY

# PROJECTPROPOSAL

## Project Title: - NEURORYTHM

## 2. Project Scope: - (Max 500 words)

Neuromorphic computing, inspired by the intricate architecture and functionality of the human brain, offers a promising paradigm for the development of efficient and adaptive computing systems. Unlike traditional von Neumann architectures, neuromorphic systems leverage the principles of neural networks to process information in a highly parallel and energy-efficient manner. This abstract explores the fundamental concepts and advancements in neuromorphic computing, highlighting its potential applications across various domains, including artificial intelligence, robotics, and neuroscience research. The abstract delves into the key components of neuromorphic systems, such as neurons, synapses, and interconnects, and discusses how these components emulate the behavior of biological neural networks. Furthermore, it examines the role of emerging technologies, such as memristors and spiking neural networks, in enabling neuromorphic computing hardware. Moreover, the abstract discusses the computational advantages offered by neuromorphic systems, including low power consumption, real-time processing capabilities, and adaptability to dynamic environments. It also explores ongoing research challenges, such as scalability, programming models, and hardware-software co-design, which need to be addressed for the widespread adoption of neuromorphic computing.

## 3. Requirements: -

* Hardware Requirements

1. Operational amplifiers (Op-amps) or digital logic gates
2. Resistors or variable resistors (potentiometers)
3. Wires or conductive traces on a breadboard or printed circuit board (PCB)
4. On-chip memory or external memory modules
5. Voltage regulators, capacitors, and power sources (such as batteries or power supplies)

* Software Requirements

1. Programming Language

2. Neural Network Libraries

3. Development Environment

**STUDENTS DETAILS**

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| --- | --- | --- |
| **Name** | **UID** | **Signature** |
| Harshit Bhardwaj | 21BCS6298 |  |
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| Amar Kajla | 21BCS6304 |  |

**APPROVAL AND AUTHORITY TO PROCEED**

We approve the project as described above, and authorize the team to proceed.

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| **Name** | **Title** | **Signature**  **(With Date)** |
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