**MACHINE LEARNING in BIOINFORMATICS**

A THESIS SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENT FOR THE DEGREE OF

**BACHELOR OF TECHNOLOGY**

IN

**COMPUTER SCIENCE and ENGINEERING**

SUBMITTED BY

|  |  |
| --- | --- |
| **Name** | **Univ. Roll No.** |
| Arkadeep Bagal | 10800116018 |
| Farooq Ansari | 10800116102 |
| Rohan Kumar Singh | 10800116062 |
| Rohit Kumar Majee | 10800116061 |
|  |  |

UNDER THE GUIDANCE OF

**Mr. Sabyasachi Mukherjee**

Associate Professor



DEPARTMENT OF COMPUTER SCIENCE and ENGINEERING

**ASANSOL ENGINEERING COLLAGE**

AFFILIATED TO

MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY

MAY 2020

|  |  |
| --- | --- |
|  | **DEPARTMENTOF XXXX ENGINEERING** |
| **ASANSOL ENGINEERING COLLEGE**  Vivekananda Sarani, Kanyapur, Asansol, West Bengal – 713305 |

*Certificate of Recommendation*

I hereby recommend that the preliminary thesis report entitled, **“Machine Learing in Bioinformatics”** carried out under my supervision by the group of students listed below may be accepted in partial fulfilment of the requirement for the degree of “Bachelor of Technology in **Computer Science and** **Engineering**” of Asansol Engineering College under MAKAUT.

|  |  |
| --- | --- |
| **Name** | **Univ. Roll No.** |
| Arkadeep Bagal | 10800116018 |
| Farooq Ansari | 10800116102 |
| Rohan Kumar Singh | 10800116062 |
| Rohit Kumar Majee | 10800116061 |
|  |  |

…………………………………

(Guide Name)

Mr. Sabyasachi Mukherjee

Dept. of Computer Science and Engineering,

Asansol Engineering College,

Asansol-713305

Countersigned:

………………………………

(Head of the Department Name)

Head of the Department

Dept. of XXXEngineering,

Asansol Engineering College,

Asansol-713305

|  |  |
| --- | --- |
|  | **DEPARTMENTOF XXX ENGINEERING** |
| **ASANSOL ENGINEERING COLLEGE**  Vivekananda Sarani, Kanyapur, Asansol, West Bengal – 713305 |

***Certificate of Approval***

The forgoing thesis is hereby approved as creditable study of an engineering subject carried out and presented in a manner satisfactory to warrant its acceptance as prerequisite to the degree for which it has been submitted. It is understood that by this approval the undersigned does not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the thesis only for the purpose for which it is submitted.

…………………………………

(**Guide Name**)

Thesis Supervisor

Dept. of XXXEngineering,

Asansol Engineering College,

Asansol-713305

***Acknowledgement***

It is our great privilege to express our profound and sincere gratitude to our Project Supervisor, **Guide Name**for providing us a very cooperative and precious guidance at every stage of the present project work being carried out under his/her supervision. His valuable advice and instructions in carrying out the present study has been a very rewarding and pleasurable experience that has greatly benefited us throughout the course of work.

We would like to convey our sincere gratitude towards **HOD Name**, Head of the Department of **XXXX**, Asansol Engineering College for providing us the requisite support fortimely completion of our work. We would also like to pay our heartiest thanks and gratitude to all the teachers of the Department of **XXX**, Asansol Engineering College for varioussuggestions being provided in attaining success in our work.

We would like to express our earnest thanks to **Mr. XXXX**, of CSE Project Lab for his technical assistance provided during our project work.

Finally, I would like to express my deep sense of gratitude to my parents for their constant motivation and support throughout my work.

…………………………………

(Student 1)

…………………………………

(Student 2)

…………………………………

(Student 3)

…………………………………

(Student 4)

***Abstract***

/\* write your own abstract, this is just a guideline\*/

In this era of technology and innovation, human needs are rapidly increasing and new ways to improve the efficiency or to ease the process are constantly being invented. Human needs have no bound, but our bodies do have constraints. In an effort to diminish these constraints these following studies are performed. Robotic Arm emphasizes in reducing the physical strains put on by the heavy industrial works and works relating to precise movements.

This Robotic Arm will see its use in Industries of steel manufacturing, power plants, and in any Industrial field as well as, in Medical Sector and in the field of Research and Development.

Designing and Realization of the project, the Robotic Arm has 4 Degrees of Freedom i.e. it is able to move in 4 axes. The movements are possible by the 5 servomotors. A mechanical claw or holder can be either, accessed to hold the any object that is to either be moved or carry to another location, or access any tools to operate on something. While the robot is busy doing these processes the controls are provided by an external controller mainly an android application, by an integrated IOT module, which is an ESP 8266 Module and whole operation will be driven by an Arduino.

***Contents***

|  |  |  |  |
| --- | --- | --- | --- |
| Certificate of Recommendation……………………………………………………………… | | | ii |
| Certificate of Approval………………………………………………………………............. | | | iii |
| Acknowledgement…………………………………………………………............................ | | | iv |
| Abstract…………………………………………………………………………...………….. | | | v |
| Contents……………………………………………………………………………………… | | | v |
| List of Figures………………………………………………………………………………. | | | vii |
| List of Tables………………………………………………………………………………. | | | viii |
|  | | |  |
| **1.** | **Preface………………………………………………………………………………** | |  |
|  | 1.1 | Introduction……………………………………………………...…………… | 1 |
|  | 1.2 | Motivation of the project………………………………….………………….. | 2 |
|  | 1.3 | Basic description of the project………………………….…………………… | 3 |
| **2.** | **Literature Review** | |  |
|  | 2.1 | General……………………………………………………...………………… | 4 |
|  | 2.2 | Review of relatedworks………………………….…………......….…...…… | 6 |
| **3.** | **Related Theories and Algorithms…………..……………………………………..** | |  |
|  | 3.1 | Fundamental theories underlying the work.………………………………….. | 8 |
|  | 3.2 | Fundamental algorithms………………………………….…………………… | 10 |
| **4.** | **Proposed model/algorithm…………………………………….………………….** | |  |
|  | 4.1 | Proposed model……………………………………………………………….. | 12 |
|  | 4.2 | Proposed algorithms……………………….…………………………………. | 16 |
| **5.** | **Simulation Results…………………………………………...…………………….…** | |  |
|  | 4.1 | Experimental set up ……………………………………………..………….. | 20 |
|  | 4.2 | Experimental results………...……………...……… | 25 |
| **6.** | **Discussion and Conclusion ……...…………………………………………….…….** | |  |
|  | 6.1 | Discussion…………………………………..………………………….…….. | 30 |
|  | 6.2 | Future work…………………………………..….……………………...…….. | 32 |
|  | 6.3 | Conclusion…………………………………………………………………….. | 34 |
|  | **References…………………………………………………………………………….** | |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  | | |  |

***List of Figures***

|  |  |  |
| --- | --- | --- |
| Fig. 2.1 | XXXXX | Page no |
| Fig. 2.2 | XXXXX | Page no |
| Fig. 2.3 | XXXXX | Page no |

***List of Tables***

|  |  |  |
| --- | --- | --- |
| Table 4.1 | XXXXX | Page no |
| Table 5.1 | XXXXX | Page no |
| Table 5.2 | XXXXX | Page no |