Center for Bioinformatics and Artificial Intelligence (CBIAI)
Uttara University (UU)

About CBIAI

The Center for Bioinformatics and Artificial Intelligence (CBIAI) was established with the objective of conducting research and teaching on computational biology. Subsequently, the Center will implement Bioinformatics, Machine Learning, and Artificial Intelligence in the life sciences, thereby transforming UU into a world-class location. The center's objective is to enhance the teaching and research activities of faculty and students by promoting their participation in advanced research projects and publication in IF journals. Additionally, it will provide structured academic diploma and certification programs to assist research enthusiasts in the fields of bioinformatics and AI. Additionally, the center will provide stakeholders with professional, fee-based services.

Bioinformatics (BI): An interdisciplinary field that integrates biology, computer science, mathematics, and statistics to collect, store, analyse, and interpret biological data is known as bioinformatics (BI). It creates computational methods and software to comprehend intricate biological systems via data generated from genomics, transcriptomics, proteomics, metabolomics, and other life science studies.

Artificial Intelligence (AI): Artificial Intelligence (AI) is the broader discipline of computer science that is dedicated to the development of systems that are capable of performing tasks that are typically associated with human intelligence, including language comprehension, language learning, problem-solving, perception, and decision-making.

Machine Learning (ML): Machine Learning (ML) is a subfield of artificial intelligence that allows computers to generate predictions or decisions by learning patterns from data without requiring explicit programming for each task. As they are exposed to a greater volume of data, machine learning algorithms enhance their performance.

Approved 4.8.26

Vision

CBIAI's objective is to establish itself as a leading center of excellence in bioinformatics and artificial intelligence by fostering interdisciplinary research, instruction, and scientific development by integrating biological and computer sciences.

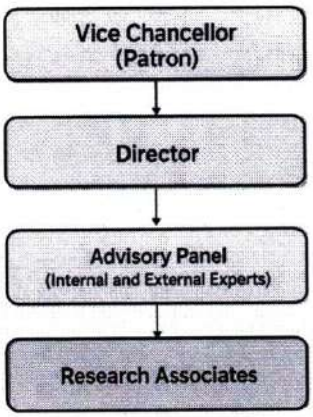
Activities

Advanced research that concentrates on life science is followed by the integration of Bioinformatics, Machine Learning, and Artificial Intelligence. Additionally, it will be responsible for the development of research pipelines, automation software, and the production of high-quality publications. Additionally, it will oversee the acquisition of grants, curricular development, professional services, curriculum

development, industry engagement, teaching, training, and capacity building, as well as the development of computational analysis.

Organogram:

A diagram that shows the structure of CBIAI and the relationships and relative ranks of its parts and positions/responsibilities.



Responsibilities

1. **Vice Chancellor (Patron):** The most esteemed position will oversee the overall operations and provide guidance. Decides on the recruitment of personnel and the approval of proposed activities.
2. **Director:** Will determine the activities that will be conducted and assist the Patron in determining the necessary personnel and activities for approval.

3. **Advisory Panel:** The Director may request advice from the Advisory Panel regarding the plan of work and the mode of activities.

4. **Research Associates:** Execute research and any other tasks as determined by the Director and the Advisory Panel.

Key Functions and Objectives:

1. Integrate bioinformatics, artificial intelligence, and machine learning to address challenges in medicine, agriculture, and the environment, thereby advancing interdisciplinary research.
2. Create computational tools and analytical pipelines that are AI-driven for the analysis of genomics, transcriptomics, proteomics, metabolomics, structural biology, and multi-omics data.
3. To establish a team of educators and students who possess the necessary skills to conduct research and provide support for their ideas both domestically and internationally.
4. Provide certificate, diploma, and professional training programs in bioinformatics, artificial intelligence, machine learning, multi-omics, and biomedical data science that are internationally recognised.

5. Develop national capacity by offering students, researchers, and professionals top-tier academic programs, workshops, and training in bioinformatics, AI, data science, and life sciences.
6. Accelerate scientific discovery and technology transfer by fostering innovation and collaboration through partnerships with universities, research institutes, hospitals, government organisations, and industry.
7. Install high-performance computing facilities, secure biological data repositories, and cloud-based platforms to support advanced life science research and evidence-based decision-making. Establish an advanced research infrastructure.
8. To provide researchers, industries, and research institutes with professional, fee-based services in computational biology and machine learning.

Note: Functions are subject to modification during the ongoing development process.

Budget and Funding: CBIAI is self-sustaining-- will run on its activities and service generated funds.

Expenditure:

1. **Infrastructure Requirements:**
   - High-performance computing
   - Laboratory equipment (where applicable)
   - Cloud computing resources
2. **Academic Programs:**
   - Instructor honorariums
   - Teaching materials and resources
3. **Research Activities:**
   - Research consumables
   - Publication fees
   - Conference travel
4. **Paid Services Division:**
   - Marketing and outreach
5. **Other Costs**

Sources of Fund

1. External Funding Sources (e.g., government research grants)
2. Industry Partnership
3. Program Tuition Fees (Diploma, Training)
4. Paid Services Providing
5. Other Sources