

**CROP YIELD PREDICTION
USING TEMPERATURE AND RAINFALL PARAMETERS
USING ARTIFICIAL NEURAL NETWORK (ANN)**

**A Major Project Stage-II Report Submitted to
Jawaharlal Nehru Technological University Hyderabad**

*In partial fulfillment of the requirements for the award of
the degree of*

**BACHELOR OF TECHNOLOGY
IN
COMPUTER SCIENCE AND ENGINEERING**

BY

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Under the Supervision of

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**Department of Computer Science and Engineering
BHARAT INSTITUTE OF ENGINEERING AND TECHNOLOGY**

Accredited by NAAC, Accredited by NBA (UG Programs: CSE, ECE, EEE & Mechanical)
Approved by AICTE, Affiliated to JNTUH Hyderabad
Ibrahimpattanam-501 510, Hyderabad, Telangana.

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Certificate

*This is to certify that the Major Project Stage-II entitled
“CROP YIELD PREDICTION USING TEMPERATURE & RAINFALL
PARAMETERS USING ARTIFICIAL NEURAL NETWORK (ANN) ” is
the Bonafide work done*

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Vision of the Institution

To achieve the autonomous & university status and spread universal education by inculcating discipline, character and knowledge into the young minds and would them into enlightened citizens.

Mission of the Institution

Our mission is to impart education, in a conducive ambience, as comprehensive as possible, with the support of all the modern technologies and make the students acquire the ability and passion to work wisely, creatively and effectively for the betterment of our society.

Vision of CSE department

Serving the high-quality educational needs of local and rural students within the core areas of Computer Science and Engineering and Information Technology through a rigorous curriculum of theory, research and collaboration with other disciplines that is distinguished by its impact on academia, industry and society.

Mission of CSE department

The Mission of the department of Computer Science and Engineering is to work closely with industry and research organizations to provide high quality computer education in both the theoretical and applications of Computer Science and Engineering. Then department encourages original thinking, fosters research and development, evolve innovative applications of technology.



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PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The Computer Science and Engineering program provides students with an in depth education in the conceptual foundations of computer science and in complex hardware and software systems. It allows them to explore the connections between computer science and a variety of other disciplines in engineering and outside. Combined with a strong education in mathematics, science, and the liberal arts it prepares students to be leaders in computer science practice, applications to other disciplines and research.

Program Educational Objective 1: (PEO1)

The graduates of Computer Science and Engineering will have successful career in technology or managerial functions.

Program Educational Objective 2: (PEO2)

The graduates of the program will have solid technical and professional foundation to continue higher studies.

Program Educational Objective 3: (PEO3)

The graduates of the program will have skills to develop products, offer services and create new knowledge.

Program Educational Objective 4: (PEO4)

The graduates of the program will have fundamental awareness of Industry processes, tools and technologies.



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PROGRAM OUTCOMES (POs)

PO1:	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2:	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3:	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4:	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5:	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6:	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7:	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8:	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9:	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10:	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11:	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12:	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



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PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1:	Foundation of mathematical concepts: To use mathematical methodologies to crack problem using suitable mathematical analysis, data structure and suitable algorithm.
PSO2:	Foundation of Computer System: The ability to interpret the fundamental concepts and methodology of computer systems. Students can understand the functionality of hardware and software aspects of computer systems.
PSO3:	Foundations of Software development: The ability to grasp the software development lifecycle and methodologies of software systems. Possess competent skills and knowledge of software design process. Familiarity and practical proficiency with a broad area of programming concepts and provide new ideas and innovations towards Research.

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the task would be put incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success.

We avail this opportunity to express our deep sense of gratitude and hearty thanks to **Sri CH. Venugopal Reddy**, Chairman & Secretary of BIET, for providing congenial atmosphere and encouragement.

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We are thankful to our guide **Mr. N S S S Girish Kumar**, Assistant Professor, Computer Science and Engineering for his sustained inspiring Guidance and cooperation throughout the process of this project. His wise counsel and suggestions were invaluable.

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We place highest regards to our Parent, our Friends and Well-wishers who helped a lot in making the report of this project.

DECLARATION

We hereby declare that this Major Project Stage-I Project Work is titled **“CROP YIELD PREDICTION USING TEMPERATURE AND RAINFALL PARAMETERS USING ARTIFICIAL NEURAL NETWORK (ANN)”** is a genuine project carried out by us, in **B. Tech (Computer Science and Engineering)** degree course of **Jawaharlal Nehru Technology** other course or university for the award of my degree by us.

Date:

Candidate Name(s)	Roll Number	Signature
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ABSTRACT

Agriculture presents a dwelling for round 58% of India`s population. Agriculture, forestry, and fisheries have been predicted to generate ₹19,48,000 crore (US\$ 276.37 billion) in FY20. According to the World Bank's series of improvement signs accrued from officially accepted sources, agricultural land (percent of land area) in India become recorded at 60.43% in 2018. Given the importance of agriculture in India, farmers would possibly advantage from early forecasting of agricultural yields while choosing which plants to cultivate. In phrases of agriculture output, India stands 2nd withinside the world. Agriculture and associated industries like as forestry and fisheries accounted for 15.4% of GDP (gross home product) in 2016 and hired round 31% of the group of workers in 2014.

The look at makes a specialty of predicting agricultural yields for Telangana nation the use of neural community regression modeling. The crop cycle statistics for summer, Kharif, Rabi, fall, and the complete year is used. The principal venture encountered whilst assembling the paintings become the dearth of a unmarried supply dataset to educate the cautioned version on. To deal with those issues, all dispersed statistics is accumulated and applicable characteristic engineering and statistics pre-processing steps are employed.

The very last built dataset takes parameters like cultivation area, crop, nation, district, season, year, district smart annual rainfall (mm), district smart most and minimal temperature (°C) and manufacturing or yield throughout 1998 to 2014. To attain statistics for the nation of Telangana, the dataset is filtered the usage of Python Pandas and Pandas Profiling tools. The underlying version is constructed utilizing a Multilayer Perceptron Neural Network, a Relu Activation function, an Adam Optimizer, and 50 epochs with a batch length of 200. Several extra famous regression algorithms consisting of Multinomial Linear Regression, Random Forest Regression and Support Vector Machine also are built and educated the usage of the equal dataset for you to examine their overall performance to the bottom version.

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