KARNATAKA STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

Indian Institute of Science campus, Bengaluru

Telephone: 080 -23600978, 23341652 || Email: spp@kscst.org.in
Website: www.kscst.org.in/spp.html or https://kscst.karnataka.gov.in/en

FORMAT FOR STUDENT PROJECT PROPOSAL FOR THE

48th SERIES OF STUDENT PROJECT PROGRAMME

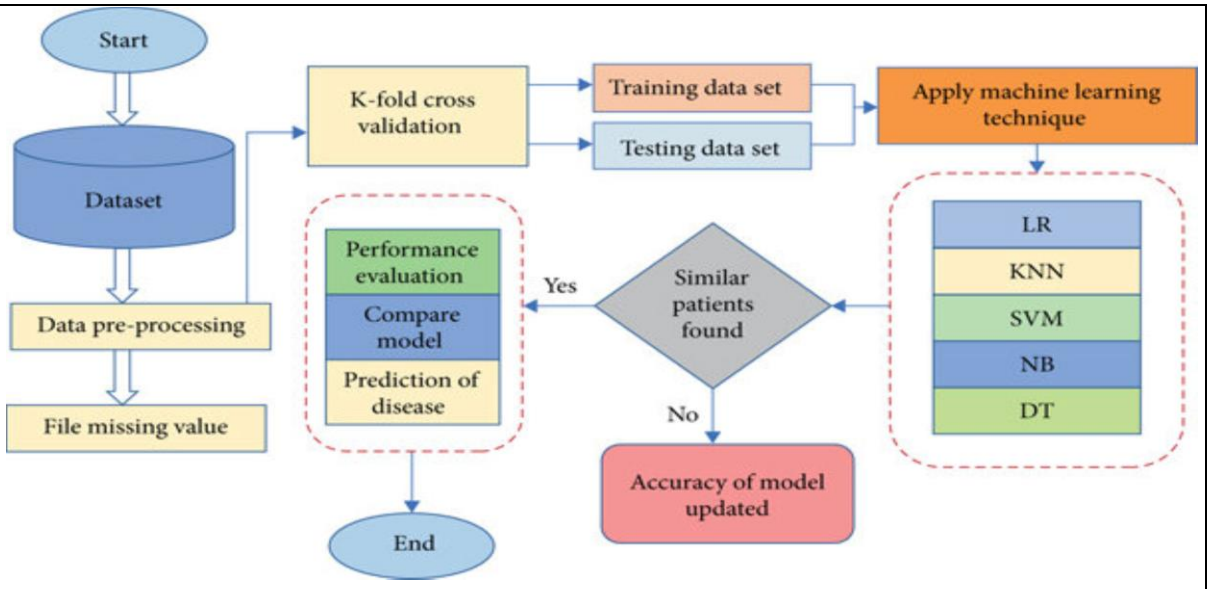
(Handwritten proposals will not be accepted, please fill all the details in this MS word file, insert images / diagrams wherever necessary. Convert to pdf file, get it approved from the project guide / head of the department and principal of your institution. Keep ready the scanned pdf file of 1) Declaration and Endorsement 2) details of processing fees made and fill-up the Google Form.

https://forms.gle/ks2WxWB4ei1hgv9D9

1.	**Name of the College:** **Nagarjuna College of Engineering and Technology**
2.	**Project Title:** **Heart Stroke Prediction using ML**
3.	**Branch:** **Computer Science and Engineering**
4.	**Theme (as per KSCST poster):** **Health Care & Artificial Intelligence** **(The project proposals shall mandatorily be from one of the broad themes / areas. Visit website www.kscst.org.in/spp.html)**
5.	**Name(s) of project guide(s):** 1. **Name: Dr. Sudhakara Reddy M** **Email id: sudhakar@ncetmail.com** **Contact No.: 9880618595**
6.	**Name of Team Members (Strictly not more than four students in a batch):** *(Type names in Capital Letters as provided in your college)* (Please paste the latest passport size photograph adjacent to your respective names) **Name: HARISH GOWDA R** **USN No.: 1NC21CS035** **Email id: harishhgowdaa@gmail.com** **Mobile No: 7760471879** 

	Name: DIVYA S **USN No.: 1NC21CS029** **Email id: srinivasdivya271@gmail.com** **Mobile No.: 9008044626**  **Name: AFSHA SULTHANA** **USN No.: 1NC21CS003** **Email id: afshasulthana1234@gmail.com** **Mobile No.: 7899436807**  **Name: BUSIREDDY MADHU REDDY** **USN No.: 1NC21CS020** **Email id: bmadhureddy226@gmail.com** **Mobile No.: 9347314541** 
7.	**Team Leader of the Project:** **Name: HARISH GOWDA R** **USN No.: 1NC21CS035** **Email id: harishhgowdaa@gmail.com** **Mobile No.: 7760471879**
8.	**Processing Fee Details (Through Online Payment only):** **(processing fee of Rs. 1180/-)** **Please furnish the payment details in the format provided in the last page of the proposal.**
9.	**Date of commencement of the Project: 26/09/2024**
10.	**Probable date of completion of the project: 12/02/2025**
11.	**Scope / Objectives of the project:** 1. Proactive Risk Identification: Identify individuals at high risk for heart strokes well before symptoms manifest. This early detection is vital for enabling preventive measures and timely medical interventions.

	2. Holistic Data Exploration: We intend to collect and analyse diverse patient information, which includes not just medical records, but also lifestyle choices and demographic details. 3. Application of Machine Learning Techniques: Leverage a range of machine learning algorithms—like K-Nearest Neighbours, Decision Trees, and Random Forests—to accurately predict stroke risks. 4. Rigorous Data Preparation: To ensure the integrity and standardization of our dataset, which directly impacts the success of our predictive analysis. 5. User-Friendly Interface Creation: To facilitate practical use in healthcare settings, we plan to design an intuitive interface—possibly an API—that allows healthcare professionals to easily input patient data and obtain quick, understandable predictions
12.	**Methodology:** • Data Acquisition and Overview: The project begins by sourcing a heart stroke dataset from Kaggle, which contains 12 different attributes related to patient demographics, health statuses, and lifestyle choices. This dataset forms the backbone of our analysis, providing valuable insights into the factors that influence stroke risk. • Data Cleaning and Feature Development: This involves addressing missing values, correcting any inconsistencies, and transforming the data into a format that's ready for analysis. • Implementation of Machine Learning Models: Each model is trained on the dataset, allowing us to assess their ability to predict the risk of heart strokes. We evaluate the performance of these models using crucial metrics like accuracy, precision, recall, and F-scores to identify the one that works best for our objectives. • Enhancing Model Performance and Validation: Following the initial training phase, we focus on fine-tuning the models using strategies such as cross-validation and hyperparameter optimization. • Creating a User-Centric Interface: To make our findings accessible to healthcare practitioners, we plan to develop a user-friendly interface, possibly as an API. This interface will enable medical professionals to easily input patient information and receive fast, understandable predictions.



13. **Expected Outcome of the project:**

The expected outcome of the "**Heart Stroke Prediction using ML**" project is to develop a robust predictive model that can accurately identify individuals at high risk of experiencing a heart stroke. By leveraging various machine learning algorithms, such as K-Nearest Neighbours (KNN), Decision Trees, and Random Forests, the project aims to achieve reliable risk Assessment, evaluation of different approaches, facilitating early interventions, user-friendly tool for healthcare providers, and advancing preventive healthcare practices, by fulfilling these expected outcomes, the project aspires to enhance the overall quality of healthcare services and provide valuable insights for professionals involved in managing stroke risks.

14. **Is the project proposed relevant to the Industry / Society or Institution?**

Yes

Yes / No:

If yes, please provide details of the industry / institution and contact details:

The proposed project on "**Heart Stroke Prediction using ML**" is highly relevant to both the industry and society, as well as to academic institutions. In industry like healthcare improvement: by developing a machine learning model that can accurately identify individuals at high risk, healthcare providers, and integration with existing systems: the proposed user-friendly interface (potentially an API) allows for easy integration into existing healthcare systems, making it practical for hospitals and clinics to adopt. In society, Public Health Impact: With heart strokes being a leading cause of death globally, the ability to predict and prevent strokes can have a significant positive impact on public health, and Awareness and Education: the project can contribute to public awareness campaigns about heart health, encouraging healthier lifestyles.

15. **Can the product or process developed in the project be taken up for filing a Patent?**

Yes / No:

No

Prior Art search done?

Yes/No:

No

16. **Budget details (break-up details should be given):**

Note: KSCST will provide nominal grant support for carrying out the project by students if selected by the project selection committee.

Budget	Amount
a) Materials / Consumables (Medical datasets, Subscriptions to data services, Software Licenses, Cloud and Github Subscriptions, external storage devices for backup)	6000.00
b) Labor (Development Team: Data Engineer, DevOps Engineer. Testing and Validation: QA Specialist, Compliance Officer)	3000.00
c) Travel (Conferences/Workshops, Client Meetings)	1000.00
e) Miscellaneous (Promotional Events, Data Handling and Privacy Consulting)	3000.00
Total	13000.00

17. **Any other technical details (Please specify):**

The "Heart Stroke Prediction using ML" project uses a dataset from Kaggle that includes 12 key attributes reflecting patient demographics, health conditions, and lifestyle choices. To prepare the data for analysis, we divide it into 80% for training the models and 20% for testing their performance, ensuring thorough cleaning and standardization throughout the preprocessing phase. We explore various machine learning algorithms, such as Random Forest, Decision Trees, and K-Nearest Neighbours (KNN), to accurately assess the risk of stroke. The effectiveness of each model is measured using several performance metrics, including accuracy, precision, recall, and F-measure. We also utilize optimization techniques like cross-validation and hyperparameter tuning to fine-tune the models and improve their predictive capabilities. To make the findings accessible to

	healthcare professionals, we plan to develop a user-friendly interface, possibly in the form of an API, which will allow users to easily enter patient information and quickly receive useful predictions to aid in clinical decision-making.
18.	**SPP Coordinator (Identified by the college):** **Note:** To be identified by the principal of the institution. The project proposals must be submitted to KSCST through SPP coordinator designated by the principal. **Name: Dr. Rohith S** **Email id: s.rohith@ncetmail.com** **Contact No.: 9986957022**

Name of the Project Guide: Sudhakara Reddy M

Email id: sudhakar@ncetmail.com
Contact No.: 9880618595

Name of the HOD: Dr. Mallikarjuna M Kodabagi

Email id: hodcse@ncetmail.com
Contact No.: 7022244613

DECLARATION

(From Project Students)

(To scan this page and enclose in the project proposal)

We, the project team hereby declare that the details enclosed in the project proposal (Title of the Project: **Heart Stroke Prediction using ML**, Branch: **Computer Science and Engineering**, College: **Nagarjuna College of Engineering and Technology**) are true and correct to the best of our knowledge and belief. We undertake to inform the Karnataka State Council for Science and Technology (KSCST) of any changes to the project title or team members' names immediately through our project guide or the SPP Coordinator of our institution.

Additionally, we declare that the project work is original and not a result of copying or purchasing. We are committed to completing the project independently, with support from our faculty and project guide, while utilizing the facilities provided by the college. We will not engage in plagiarism and pledge to be sincere and dedicated in executing and completing the project as proposed.

We understand that if any of the above information is found to be false, untrue, or misleading, we may be held liable. We authorize the sharing of the project information contained in this proposal with KSCST, Bengaluru.

We acknowledge that the project team must exhibit and demonstrate the project, participate in the mid-term evaluation of sanctioned projects, and engage with experts. Additionally, we must exhibit the project at the Annual State-Level Poster Presentation and Exhibition, if selected. Should our team fail to participate in the mid-term evaluation or the Annual Exhibition (if selected), we understand that the supported project funds will be returned to KSCST.

We also enclose the endorsement form for KSCST, Bengaluru.

Name of the students with USN No. **Signature with date**

1. Harish Gowda R (1NC21CS035)

2. Divya S (1NC21CS029)

3. Afsha Sulthana (1NC21CS003)

4. Busireddy Madhu Reddy (1NC21CS020)

(Name & Signature of Project Guide with Seal)
Email id: sudhakar@ncetmail.com
Contact No.: 9880618595

(Name & Signature of HOD with Seal)
Email id: hodcse@ncetmail.com
Contact No.: 7022244613

ENDORSEMENT

(From College, endorsement to be taken in the institution / Department Letter head)

(To scan this page and enclose in the project proposal)

This is to certify that 1) Mr. Harish Gowda R, 2) Ms. Divya S 3) Ms. Afsha Sulthana, 4) Mr. Busireddy Madhu Reddy are bonafide student(s) of Department of Computer Science and Engineering, in the degree program of our institution. If the project proposal submitted by these students under the 48th series of Student Project Programme is selected by KSCST, we will provide the requisite laboratory / Computer / infrastructure support in our college / Institution. Further we also take necessary steps to see that the project team will exhibit / demonstrate their project in the mid-term evaluation of project and in the Annual State-Level Poster Presentation and Exhibition (if selected). If the student team fails to send the completed project report or fails to attend the evaluation in mid-term evaluation of sanctioned projects or fails to attend the Annual State-Level Poster Presentation and Exhibition (if selected), the supported project amount will be returned to KSCST.

(Name & Signature of Project Guide with Seal)	**(Signature of HOD with Seal)**	**(Signature of the Principal with Seal)**
Email id: sudhakar@ncetmail.com	**Email id: hodcse@ncetmail.com**	**Email id: principle@ncetmail.com**
Contact No.: 9880618595	**Contact No.:**	**Contact No.:**

DETAILS OF PROCESSING FEES MADE THROUGH NEFT / UPI PAYMENT

(**Note:** Include this page in the softcopy of the student project proposal. The student team shall furnish the details in the Google Form. It is informed to the students to 1) keep ready the softcopy of the project proposal and other documents and 2) Furnish the payment made details as processing fees and 3) update the details in the Google Form on the same day of payment made to KSCST by NEFT / UPI payment).

1. TITLE OF THE PROJECT	:	Heart Stroke Prediction using ML
2. NAME OF THE TEAM LEADER	:	Harish Gowda R
3. EMAIL ID	:	harishhgowdaa@gmail.com
4. CONTACT MOBILE NO.	:	7760471879

PAYMENT MADE DETAILS

5. BANK REF. NO. / UTR NO. / UPI No. (12 digits)	:	UPI Ref: 433314621641
6. TRANSACTION ID	:	UPI-433340432956
7. NAME OF THE SENDER / ACCOUNT HOLDER and CONTACT NUMBER	:	Harish Gowda R 7760471879
8. NAME OF THE BANK	:	Kotak Mahindra Bank
9. PROCESSING FEES	:	Rs. 1,180/- (Inclusive of 18% GST)
10. DATE OF PAYMENT MADE	:	28 Nov 2024
11. TIME	:	02:57 PM
12. MODE OF PAYMENT MADE (NEFT / UPI, PLEASE SPECIFY)	:	Net Banking

(Name & Signature of the team leader)

(Name & Signature of Project Guide or HOD with Seal)

KARNATAKA STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

Indian Institute of Science campus, Bengaluru

48th SERIES OF STUDENT PROJECT PROGRAMME (SPP)

(Note: This page is for information about bank details of KSCST to the student team and college / institution and not to include this page in the project proposal softcopy)

BANK ACCOUNT DETAILS OF KSCST

Name and address of the Institution	Karnataka State Council for Science and Technology, IISc Campus, Bangalore -560012
Account holder's name / Designation	Secretary, Karnataka State Council for Science and Technology
Bank Account No. & Name of the bank	Current A/C No. 0683201000024 Canara Bank, IISc Campus Branch, Bangalore-560012
IFSC Code	CNRB0000683
MICR Code	560015023
Bank Branch Address	Canara Bank, Indian Institute of Science, Bangalore-560012

BANK DETAILS

Name of the Agency	Karnataka State Council for Science and Technology IISc Campus, Bangalore - 560012
Account holder's name / Designation	Secretary , Karnataka State Council for Science and Technology
Bank Account No. & Name of the bank	Current A/C No. 0683201000024 Canara Bank IISc Campus Branch Bangalore-560012
IFSC Code	CNRB0000683
MICR Code	560015023
Bank Branch Address	Canara Bank Indian Institute of Science Bangalore-560012

केनरा बैंक Canara Bank
भारत सरकार का उपक्रम
A Government of India Undertaking
सिंडिकेट Syndicate

KARNATAKA STATE COUNCIL FOR SCIENCE

0683201000024@cnrb

BHIM BHARAT INTERFACE FOR MONEY | UPI UNIFIED PAYMENTS INTERFACE

G20 भारत 2023 INDIA

वसुधैव कुटुम्बकम्

ONE EARTH • ONE FAMILY • ONE FUTURE