VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA, BELAGAVI – 590 018, KARNATAKA, INDIA

A PROJECT REPORT

on

"Web-Based Automatic Timetable Scheduler for Colleges"

Submitted in partial fulfillment of the requirements for the award of
BACHELOR OF ENGINEERING
in
CSE (DATA SCIENCE)

Submitted By

Name	USN
GAURAV G ALVA	4VP22CD019
HARSHIT MAHESH NAIK	4VP22CD022
PRAPTHI J P	4VP22CD037
SUPREETHA N S	4VP22CD058

Under the Guidance of
Prof. Chaithanya D
Assistant Professor

DEPARTMENT OF CSE (DATA SCIENCE)
VIVEKANANDA COLLEGE OF ENGINEERING & TECHNOLOGY
[A Unit of Vivekananda Vidyavardhaka Sangha, Puttur (R)]
Affiliated to Visvesvaraya Technological University and Approved by AICTE New Delhi & Govt. of Karnataka
Nehru Nagara, Puttur – 574 203, DK, Karnataka, India

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Nehru Nagara, Puttur – 574 203, DK, Karnataka, India

DEPARTMENT OF CSE (DATA SCIENCE)

CERTIFICATE

Certified that the project work entitled **"Web-Based Automatic Timetable Scheduler for Colleges"** is carried out by **Mr. Gaurav G Alva, Mr. Harshit Mahesh Naik, Ms. Prapthi J P, and Ms. Supreetha N S** bearing USN **4VP22CD019, 4VP22CD022, 4VP22CD037 and 4VP22CD058**, respectively bonafide students of **Vivekananda College of Engineering & Technology**, in partial fulfillment for the award of **Bachelor of Engineering** in **CSE (Data Science)** of the **Visvesvaraya Technological University, Belagavi** during the year 2025-26. It is certified that all corrections/ suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library.

The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the said Degree.

Signature of the Guide	**Signature of the HOD**	**Signature of the Principal**
Prof. Chaithanya D	**Prof. Roopa G K**	**Dr. Mahesh Prasanna K**

EXTERNAL VIVA

Name of the Examiners	Signature with date
1…….....	.....
2…….....	.....

DECLARATION

We, **Gaurav G Alva (4VP22CD019), Harshit Mahesh Naik (4VP22CD022), Prapthi J P (4VP22CD037) and Supreetha N S (4VP22CD058)** students of seventh semester B.E. in **CSE (Data Science)**, **Vivekananda College of Engineering & Technology, Puttur**, hereby declare that the project work entitled **"Web-Based Automatic Timetable Scheduler for Colleges"** has been carried out and duly executed by us at VCET, Puttur, under the guidance of **Prof. Chaithanya D**, Assistant Professor, Department of CSE (Data Science), Vivekananda College of Engineering & Technology, Puttur, and submitted in partial fulfillment of the requirements for the award of degree in **Bachelor of Engineering in CSE (Data Science)** by **Visvesvaraya Technological University**, Belagavi during the academic year 2025-26.

Name of the Students	USN	Signature with date
Gaurav G Alva	4VP22CD019	
Harshit Mahesh Naik	4VP22CD022	
Prapthi J P	4VP22CD037	
Supreetha N S	4VP22CD058	

Date:

Place: Puttur

ABSTRACT

Timetable generation in educational institutions is a complex task involving numerous constraints, such as faculty availability, classroom assignments, subject load, and session continuity. Manual scheduling methods are often inefficient, error-prone, and difficult to scale, especially in multi-department and multi-semester academic environments. The Web-Based Automatic Timetable Scheduler for Colleges addresses this challenge by providing an intelligent, web-based timetable generation system using Genetic Algorithms. Built using Python and the Streamlit framework, the system allows administrators to input essential scheduling parameters including faculty details, subject load, classroom availability, and slot preferences. The core of the application employs a Genetic Algorithm to evolve feasible solutions, guided by a fitness function that prioritizes conflict resolution, slot continuity and balanced faculty workloads. Both hard constraints and soft constraints are incorporated to ensure practical and optimal scheduling. The generated timetables are structured to prevent common scheduling issues such as double allotment for teachers and same subject clashes, also provides scalability to accommodate elective subjects, lab sessions, and multi-semester academic structures. The system outputs user-friendly, downloadable schedules and allows for administrative oversight and adjustments. This, demonstrates the potential of evolutionary computation in solving NP-hard optimization problems of timetable scheduling, offering a scalable, accurate, and efficient solution to a long-standing administrative challenge in academic institutions.

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