



TECHNICAL UNIVERSITY OF MOMBASA INSTITUTE OF COMPUTING AND INFORMATICS

Guide to the Best Final Year Computer Science / Information Technology / Information Communication Technology Project Ideas for 2024 Classes

1. Introduction

The Computer Science / Information Technology discipline is still a very popular field of study today; it brings several applications that span a wide range. More often than not, final year students find it quite overwhelming to choose the right computer science project / Information Technology.

Projects are the only thing that matters on final graduation. One can choose a job or further education in any IT-related industry where projects have a significant effect. Project work demonstrates the depth of knowledge and some soft skills, such as creativity and problem-solving. The final year Projects will also improve your interview prospects. Therefore, it is necessary and mandatory for students to complete a project in their final year of graduation.

This guide provides you with the top computer Science / Information Technology project ideas you can implement in your final year. Here, we will give you such ideas that will help you implement an outstanding project. These projects are related to various business sectors and are implemented using Frameworks, Python R, Java, C++, and other frontend technologies.

2. What Is a Research Project?

Project work is a collection of activities that offers students the opportunity to

- learn
- do independent research
- and conduct independent action based on their skills, interests, and personal experiences.

An instructor or other guide observes and guides the project work as it progresses.

3. What Is the Domain?

In general, a domain is a particular field of thought, activity, or interest, especially one over which you have control and know in and out. Computer science indicates the domain of interest.

Best Domain to Choose for Conducting the Project

- Artificial intelligence
- Web Technology
- Data Science
- Machine Learning
- IoT (Internet of Things)
- Cloud Computing
- Big Data
- Compilers
- Android App Development
- Cryptography
- Digital Image Processing
- Networking
- Pervasive Computing
- Bio metrics
- Natural Language Processing

4. Examples of Projects for Final Year Computer Science / Information Technology Students

1. Hangman Game

Hangman is a popular guessing game, wherein one player thinks of a word, and the other one tries to guess it by suggesting letters within a limited number of guesses. The goal here is to discover the missing words.

You can declare a class to create a GUI version of the game. The user attempts to guess the letters in a secret word and loses after a specified number of guesses that are not in the word. The user guesses a letter by clicking a button whose text is that letter. You need to create separate classes to define a listener that will respond to the events that occur when the user clicks any of the buttons. The constructor will create the main panel, and a method should be called any time a new game starts. The main program makes it possible to run this class as an application. The main routine creates a window, sets it to contain a panel of type Hangman, and shows the window in the center of the screen.

2. Restaurant Booking Website

This idea will help restaurant owners handle online food orders, table booking, inventory control, generating bills, managing menus, and various customer services.

Here, you can have different Staff Management Modules, Transactions, Login Admin, Reservations, and Menu Management. You can use CSS, HTML, and JavaScript to build the website and use the MySQL database to manage backend data.



3. Library Management System

Library management involves maintaining the database of new books, the record of books issued, and their respective dates. The main goal of this computer science project is to provide an easy way to handle and automate the library management system.

This project also provides features and an interface for maintaining librarians' records, students' history of issues, and fines. Here, you need to create two modules - a user module and an admin module. These will have information about new user registration, the student login, issue date, return date, etc. There will be another admin module. To create this project, you can use Java programming language, MySQL, Net beans IDE, and PhpMyAdmin to handle server-side queries, if any, easily.

4. Web Scraping Using Beautiful Soup

Our next computer science project is Web Scraping Using Beautiful Soup. Web scraping, also known as Web crawling, scans a collection of web pages to extract raw data from the web.

As computer science engineers, you can use Beautiful Soup for web scraping to collect data from web pages and store it in various formats for analysis and decision making. Beautiful Soup is a Python package for parsing HTML and XML documents and extracting data from them. It works with your favorite parser to yield idiomatic ways of searching, navigating, and modifying the parse tree.

5. X (Twitter) Sentiment Analysis

Sentiment analysis makes use of machine learning and natural language processing techniques to analyze users' sentiments based on their emotions. It focuses not only on polarity that is positive, negative, or neutral but also on feelings and emotions such as happiness, sadness, etc. We can also carry this analysis out from tweets to understand the public's mood towards a brand or for an event like general elections in a country.

In your computer science project, you can extract tweets based on specific hashtags and analyze the data using R and Python programming language. R provides TwitteR and Python has tweepy to perform sentiment analysis.

6. Building Chatbots

A chatbot is an application to conduct an online chat conversation via text or text-to-speech. We use chatbots a lot in customer interaction, marketing on social network sites, and instant messaging the client.

spaCy is nothing but an open-source Python library for Natural Language Processing. The library is designed for developers to build interactive NLP applications, which can process and understand large volumes of text. ChatterBot is a Python library that is

designed to produce automated responses to user inputs. It combines various ML algorithms to generate several types of responses. This enables developers to build chatbots using Python to talk to humans and deliver relevant responses.

7. Uber Data Analysis

The Uber Taxi datasets about Uber's ridership are popular in data analytics. You could use this data in your computer science project to analyze Uber bookings in Nairobi city for a particular location.

Using Python and its libraries like Pandas, NumPy, Matplotlib, and Seaborn, you can find which hour of the day or day of the month has the highest pickups.

8. Election Analysis

You might have watched election results on news channels, and there is much excitement for the same. Various channels show different results for exit and opinion polls.

The interactive charts shown by news channels are done using data analytics and data visualization. Python and R are widely used for analyzing election data. In your computer science project, you can analyze any election data using R to understand the political scenario that existed in the past and how it could change in the upcoming years.

9. OpenCV Face Detection

This computer science project aims to detect an object of interest, such as a human face, in real-time and keep track of the same object.

Python and OpenCV can be used to build this project. Open Source Computer Vision Library (OpenCV) is primarily a library of programming functions aimed at real-time computer vision. It identifies the features and patterns on a human face to detect where ears, eyes, nose, and other parts are located.

10. SMS Spam Filtering

Finally, we have SMS spam filtering as our last computer science project idea. Short Message Service or SMS is one of the most widely used communication services. You often receive spam messages that include advertisements, free services, awards, promotions, etc.

You can create a spam detection model using TensorFlow and Deep learning algorithms. Deep neural networks such as Recurrent neural networks and LSTMs can predict the spam short text messages with close to 99% accuracy.

11. Handwritten Digit Classification Using CNN

- Handwritten digit classification is a model built using the CNN (convolutional neural network) algorithm.
- CNN comes under deep learning, a subset of AI which will classify the digits written in hands.
- CNN is a seven-layer model which will extract the feature from the input dataset and identify the digit.
- We use stochastic gradient descent and backpropagation algorithms to train and test the MNIST dataset.
- You can download the dataset MNIST using the Tensorflow and Keras libraries

12. Placement Cell

- The placement cell is an application built for colleges.
- We use HTML, CSS, PHP, and JAVASCRIPT for the front end and MY SQL for the back end.
- It contains two modules: User and admin. If an unknown user, he must register and upload all the required details.
- This application includes all details about upcoming and ongoing placements in the college.
- This application will also contain the details of the students who have applied for the placement drive

13. Car Data Set Analysis

- This Project will give an idea about the car and its parameters and help the buyer to buy an efficient car.
- We will apply different data science techniques to the dataset to remove all the outliers.
- And apply the Random Forest algorithm and linear regression to find the accuracy.

14. Wireless Sound Control

- This model is built using the python libraries such as OpenCV, Pycaw, TensorFlow, etc.
- The main objective of this Project is to provide a contactless experience to the users while controlling the system volume.
- Using MediaPipe, we have built a model to control our system volume by hand gestures.
- We can increase or decrease the system sound by moving our hands in front of the camera.

15. Smart Farming Using IoT Technologies

- Smart farming is a device built to detect the soil's temperature, moisture, and humidity.
- This device will help the farmer to know the conditions of the soil.
- We need an Arduino Nano IDE, temperature and moisture sensors, and some jumper wires to build this device.
- This device will have a direct contact with the soil, and the measurement is shown on the monitor screen.

For Bachelor of Business Information Technology students, here are some suggestions and ideas for your final year project related to marketing as a marketing professional:

- **Develop a marketing automation platform.** This could be a software platform that helps businesses automate their marketing tasks, such as email marketing, social media marketing, and lead generation.
- **Create a marketing analytics dashboard.** This could be a web-based dashboard that businesses can use to track their marketing performance, such as website traffic, social media engagement, and lead generation.
- **Build a marketing chatbot.** This could be a chatbot that businesses can use to interact with customers on their website or social media channels.
- **Develop a marketing app.** This could be an app that businesses can use to manage their marketing campaigns, such as creating and sending email campaigns, tracking social media engagement, and generating leads.
- **Create a marketing visualization tool.** This could be a tool that businesses can use to visualize their marketing data, such as website traffic, social media engagement, and lead generation.

These are just a few ideas to get you started. There are many other possibilities, so be creative and think about what would be most useful to you as a marketing professional.

Project Areas / Titles you can base your research on are:

n	Project Titles
1.	3D Graphics Library for Mobile Applications
2.	3D Reconstruction using single/multiple images
3.	A 2D puzzle game that raise awareness of youngster's mental health
4.	A chatbot handling software vendor client queries with large augmentation generation
5.	A comparative study: Financial Applications of ChatGPT
6.	A Conceptual Graph Approach to Support Multi perspective
7.	A metroidvania with magic
8.	A Mobile Application for Anxiety Tracking and Management
9.	A Mobile Application for Navigating HKU visitors with AR and
10.	A Mobile Application to Help Children to Avoid Cybercrime
11.	A Mobile Game to Raise Mental Health Awareness
12.	A perfect AI for the snake game
13.	A Scalable Framework for Game Transformation and Metaverse
14.	A university simulation RPG game with AI-generated images
15.	Accelerating Ranking System Using Web graph
16.	Accessing a Network Using Secure Mobile Communications
17.	Accident Detection & Alert Android App
18.	Account-based risk assessment helper for DeFi lending
19.	Active Chat Monitoring and Suspicious Chat Detection over Internet
20.	Advanced 3D Maps for Personal Digital Assistant
21.	Advanced Reliable Real Estate Portal
22.	AI Assistant to assist the general public in making smarter financial
23.	AI for Reputation Monitoring on Social Media
24.	AI Multi Agent Shopping System
25.	AI SmartContractGen
26.	AI-based real-time and early detection of financial institution
27.	AI-Driven Blockchain Forensics
28.	AI-integrated Financial Management Mobile Application
29.	Airport Network Flight Scheduler
30.	Algorithmic Trading Using Machine Learning
31.	All-in-one mobile application for elderly

32.	An Adaptive Social Media Recommendation System
33.	An All-in-one HKU App for Students
34.	An application that drafts summary emails with the help of ChatGPT
35.	An attempt to create an artificial life
36.	An Intelligent Eye
37.	Analyzing the Pros and Cons of Blockchain in Logistics and
38.	Analyzing weather-hedging derivatives using machine learning
39.	Android - PC Chatting & Image Sharing System
40.	Android Application for Call Taxi
41.	Android Blood Donation & Blood Bank Finder
42.	Android College Connect Chat App
43.	Android Customer Relationship Management System
44.	Android Employee Tracker
45.	Android Local Train Ticketing Project
46.	Android Messenger App
47.	Android Patient Tracker
48.	Android Personal Safety App
49.	Android Task Monitoring
50.	Ant Colony Optimization Technique For Mantas
51.	Asset Management App with Live Stock Prices, News, and Machine
52.	Audio Manager
53.	Augmented Reality (AR)-Driven Exhibit Interaction: A Prototype for
54.	Automated College Timetable Generator
55.	Automated Parking system using RFID Technology
56.	Automated Payroll With GPS Tracking And Image Capture
57.	Automatic Alert Alarming For Security Systems
58.	Automatic Music Transcription for Electric Bass Guitar
59.	Automatic Social Media Research and Sentiment Analysis using GPT
60.	Bandwidth-Allocation-for-Distributed-Algorithm
61.	Bank Management System
62.	Barbershop Service Booking App
63.	Battery Optimizer for Android Mobile Devices
64.	Bikers Portal
65.	Biomedical Data Mining For Web Page Relevance Checking
66.	Biometric Authentication System Using the Human Ear
67.	Blockchain Block Mining with Machine Learning

68.	Blockchain Ticketing System
69.	Blockchain-Based Land Registration System
70.	Blog Mining and Emotion Argumentation
71.	Bluetooth Project
72.	Camera Motion Sensing Project
73.	Canteen Automation System
74.	CEVAS (Countryside Educational Visits Accreditation Scheme)
75.	Channel Diversity in Wireless Mesh Network
76.	Chat Server and Client Application
77.	Collaboration Server
78.	Collective Face Detection Project
79.	College automation project
80.	College Enquiry Chat Bot
81.	Comparative Study for Algorithm of Recommendation System
82.	Comparison & Simulation of Different Queuing Models
83.	Comparison Of Clustering Algorithms
84.	Computer Troubleshooting Intelligent System
85.	Computer Vision in Archeology (Industry-based)
86.	Congestion control in ATM-based Broadband ISDNs
87.	Content Base Mail Classification
88.	Credit Card Fraud Detection
89.	Criminal Investigation Tracker with Suspect Prediction
90.	Crypto Acceleration Using Asynchronous FPGAs
91.	Customer Behaviour Prediction Using Web Usage Mining
92.	Customer Complaint Report Software
93.	Data Leakage Detection
94.	Data Mining For Automated Personality Classification
95.	Data Mining For Credit Card Application Processing
96.	Database Synchronization
97.	Decentralized crowd funding platform
98.	Dementia Virtual Memory App
99.	DEMOS Online Quiz
100.	Design And Analysis Of Sense Amplifier
101.	Detect Irregular moving objects and tracking based on color and
102.	Detecting E Banking Phishing Websites Using Associative
103.	Development of an Online Course Portal for a campus
104.	Diagnostic Centre Client Coordination System



105.	Digital Diary Project
106.	Digital System Architecture
107.	Discovering Winning Strategies in Algorithmic Trading through a
108.	Discuss the current development and the future practices of CBDCs
109.	Disease Identification using WBC Count
110.	Distributed Dealership Network Analyzer and Sales Monitor
111.	Distributed Load Sharing In Mobile Environment
112.	Doctor Appointment Booking & Live Chat App
113.	Dynamic Flash Interface
114.	Dynamic Signature Verification Using Pattern Recognition
115.	E Commerce Product Rating Based On Customer Review Mining
116.	E Healthcare – Online Consultation And Medical Subscription
117.	Early Congestion Indication
118.	E-authentication system
119.	eCommerce Analytics and Product Monitoring System
120.	Email Flyer
121.	Emergency Ambulance Booking App
122.	Empirical Model of HTTP Network Traffic
123.	Empirical Study on Model Compression Techniques for Efficient Models
124.	Employee Hourly Attendance By Barcode Scan
125.	Employee Tracking System
126.	Empowering scientific discovery with artificial intelligence
127.	Engineering College Automation and Scheduling System
128.	Enhanced Search Engine
129.	Enhancing an Application Server to Support Available Components
130.	ER Diagram Maker
131.	Exploring the application of machine learning models to achieve improve the naturalness and immersion of virtual characters in games
132.	Extended AES with Custom Configurable Encryption
133.	Face Detection Using Epitomic Analysis
134.	Face Detection Using Template Matching
135.	Fake Product Review Monitoring And Removal For Genuine Online
136.	File Compression
137.	Fingerprint Based ATM System
138.	Fingerprint Voting System Project
139.	Fitness App With Workout Diet & Motivation

140.	Football application with Machine Learning
141.	Game for STEAM education about teaching programming
142.	Game Testing and Evaluation Platform with Machine Learning for Game Developers
143.	Generic SQL Explorer
144.	Gesture Recognition System using Privacy
145.	GPS Rover
146.	Gym Trainer & Progress Tracker App
147.	Herb & Grocery Shopping Android App
148.	Hospital Management System
149.	Hot dot or not hot dog classifier.
150.	Image Encryption For Secure Internet Transfer
151.	Image Encryption Using AES Algorithm
152.	Image Encryption Using Triple DES
153.	Image Stegano graphy
154.	Image Steganography With 3 Way Encryption
155.	Implementation Of a Mini Search Engine
156.	Implementation of Software Management and Maintenance
157.	Improved Data Leakage Detection
158.	Improvement of blockchain consensus algorithm by integrating distributed machine learning
159.	Improving Diffusion Models Accuracy in generating images
160.	Improving EV Charging Experience in Densely Populated Urban Areas and Building the Next-Gen Charging Station
161.	Improving Structured Story Generation with Large Language Models
162.	in real-time
163.	In-depth study on cryptocurrency development in Hong Kong
164.	Instagram Automation
165.	Instant messaging software for academic consultation
166.	Insurance Database
167.	Intelligent Automated Mail Filtering Service for Microsoft Outlook Using GPT-3.5
168.	Intelligent PC Location Tracking System
169.	Intelligent Robot Design and Implementation
170.	Internet Based Live Courier Tracking And Delivery System
171.	Intruder Detection System Over Abnormal Internet Sequence
172.	Inventory Management System
173.	J3ME and Bluetooth Enabled Mobile Based Full Duplex Automation System
174.	Java Based Fire Alarm System

175.	Leaf-disease detection system in Medicinal Plants
176.	Learning app implementing ChatGpt
177.	Lightweight Game Engine for Modern C++
178.	Load Shedding In Mobile Systems Using Mobiquail
179.	Log Reader Based Code Analyzer
180.	Low Cost Wireless Internet
181.	Machine Learning-based Algorithmic Trading System
182.	Market Manipulation Detection using Artificial Intelligence
183.	Matrimonial Portal Project
184.	Military Access Using Card Scanning With OTP
185.	Mobile Recharging With Banking Transaction Using SMS
186.	Modelling of European Interconnectors for Sustainable Energy Integration
187.	Monitoring Suspicious Discussions On Online Forums Using Data Mining
188.	Motion Detection and Instant Alerter
189.	Movie Success Prediction Using Data Mining
190.	Multi Website Advertisement Handling System
191.	Multipurpose Online Coding Assessment Platform (MOCAP): Improving Coding and Marking Experience
192.	Multi-sensor fusion based localization
193.	Multi-Tasking Sockets
194.	Music Recognition with Fragmented Input through the use of Machine Learning
195.	Natural Language Driven AI Avatar Motion with Video-Based Motion Data
196.	Navigating the Markets: An Advanced System for Stock Pricing Prediction and Dynamic Portfolio Management
197.	Network Based Stock Price System
198.	Network Monitoring for Remote Task Executor
199.	Neural Network Model in Stock Market under Real-Life Simulation
200.	Note Taking System
201.	On Demand Remote PC Monitoring system Through Internet
202.	Online AI Shopping With M-Wallet System
203.	Online Bus Reservation
204.	Online Coding Learning Platform
205.	Online Diagnostic Lab Reporting System
206.	Online Driver Hiring Android App
207.	Online e-book maker
208.	Online Fashion Stylist Website

209.	Online Herbs Shopping Project
210.	Online Loan Application & Verification System
211.	Online marketing tool
212.	Online Mobile Recharge Portal Project
213.	Online PDF to Text Converter & Language Translator Python
214.	Opinion Mining For Comment Sentiment Analysis
215.	Opinion Mining For Restaurant Reviews
216.	Opinion Mining For Social Networking Site
217.	OptiTrans: Real-Time Optimized Public Transportation Navigation App for Kenya
218.	Paraphrasing Tool
219.	PC Configuration Retrieval System on Online Server
220.	Physics-Based Animation of Characters in Fluids
221.	Portable Media Player
222.	Public Photography Contest With Live Voting
223.	Query Processing in Global Information Systems
224.	Railway Route Optimization System
225.	Railway Tracking and Arrival Time Prediction
226.	Ray tracing in AR/MR (Augmented Reality and Mixed Reality)
227.	Real Estate Search Based On Data Mining
228.	Real Time Virtual Try On Using Computer Vision and AR
229.	Real-time monitoring of social media sentiment for detecting operational incidents in banking
230.	Reconstructing the past in the present: Placing archaeological 3D models into the real world with Augmented/Mixed Reality
231.	Re-defining AI Knowledge Bases inside Chatbots
232.	Re-design of HKU's Course Enrollment System with More Features
233.	Remote Java 2 Dotnet Communication Application
234.	Remote User Recognition And Access Provision
235.	Research related to the online stochastic matching problem
236.	Retail Store Inventory & POS Checkout App
237.	Reviews Using Opinion Mining
238.	Rich Internet Application for Weekly Automatic College Timetable Generation
239.	Robo-advisor to allow users to invest based on their interests and needs
240.	Screen Shot Grabber
241.	Seamless, Efficient and Secure E-wallet for Currency Exchange
242.	Search engine
243.	Securable Network in three-party Protocols



244.	Secure ATM Using Card Scanning Plus OTP
245.	Secure Data Transfer Over Internet Using Image Steganography
246.	Secure Electronic Fund Transfer Over Internet Using DES
247.	Secure Group Communication
248.	Secure Lab Access Using Card Scanner Plus Face Recognition
249.	Secure Remote Communication Using DES Algorithm
250.	Security System For DNS Using Cryptography
251.	Sending a secure message over a network to a remote site
252.	Sentence checker
253.	Sentiment Based Movie Rating System
254.	Sharing the Past with the Public: Augmented Reality user experiences at Archaeological Sites
255.	Sliding Window Protocol
256.	Social Implications of Financial Technologies
257.	Space Shooter Combat Game Python
258.	Student Attendance Management System
259.	Student Information System
260.	Students Grievance Redressal Cell Python
261.	Tab Based Library Book Availability & Location Finder On Wifi
262.	Telephone Billing System
263.	Text Analysis and Financial Price Trend Prediction
264.	The Road to Castle 3D
265.	Three Level Image Password Authentication
266.	Threshold-Multi signature in Distributed System
267.	Topic Detection Using Keyword Clustering
268.	Tour Recommender App Using Collaborative Filtering
269.	Training & Placement Cell Management
270.	TUM canteen voice assistant with a virtual avatar through few-shot learning and fine-tuning
271.	TUM Course Review and Planning Website
272.	TUM Portal Mobile/Web Application
273.	TUMID Single sign-on (SSO) Login with OAuth Protocol
274.	Unique User Identification Across Multiple Social Networks
275.	User Web Access Records Mining For Business Intelligence
276.	Utilizing Novel Deep Learning for Accurate Price Prediction Strategies
277.	Vehicle detection based on Deep learning models
278.	Vehicle Management System
279.	Vehicle Tracking Using Driver Mobile Gps Tracking
280.	Virtual Keyboard App using Computer Vision



281.	VR Gamification of Open World games
282.	Waste Food Management & Donation App
283.	Weather Forecasting Using Data Mining
284.	Web Agent For Learning Content Updating
285.	Web Application for Planning Semester Schedule and AI-driven Chatbot
286.	Web Camera based Baby monitor
287.	Web Content Trust Rating Prediction Using Evidence Theory
288.	Web Data Mining To Detect Online Spread Of Terrorism
289.	Web Enabled Interactive Work Order System
290.	Web Mining
291.	Web Mining For Suspicious Keyword Prominence
292.	Web Server Log Analysis System
293.	Web Server to Client communication for web usage data analysis
294.	Web-Based Tutor-Student-Matching Platform modelled after Social Media Platforms and File Systems
295.	Webpage Ranking Search Engine With Seo Suggester
296.	Website Evaluation Using Opinion Mining
297.	Website Review Tool & SEO Checker
298.	Wheelchair Guidance & Assistance App
299.	Wireless Indoor Positioning System
300.	XML-enabled Wrapper Construction

Conclusion

This guide has provided you with a set of computer science / information technology project ideas that are creative and interesting. You can work around these ideas and tips to build a great project that stands out.