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Design and Development of a Smart Food Delivery Application Using the Django Framework

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Abstract: This article talks about how to design and build a meal delivery app that lets people quickly and simply order food from restaurants around them. The main purpose of the app is to make it easier to go through the menu, place an order, pay for it, and track the delivery in real time, all in a user-friendly way. The system is built using the Django web framework. Python is the major programming language, and HTML is the language used to develop the front end. The software has two main user roles: admin and customer. Using the admin interface, administrators can alter the information about the restaurant, the menu items, the prices, and the status of orders. The customer portal also makes it easy for people to sign up, look through the restaurants that are offered, choose their favourite cuisine, and place orders. A MySQL database keeps all the information about users and orders safe and organised. The system also makes it easy to keep track of orders and deliveries in real time, which makes the experience better for everyone. This paper offers a modern, scalable, and reliable solution for online food ordering and delivery services, including important features like restaurant onboarding, safe online payments, and automatic delivery updates.

Keywords: Order Food, Local Restaurants, Track Deliveries in Real-Time, Web Framework, Favourite Food Items

Introduction

Food delivery apps have changed the way people connect with businesses and eat meals in today's fast-paced digital world. They are now an important component of daily living [61]. The rise of online meal delivery services that connect customers, restaurants, and delivery people in a single digital ecosystem is a response to changes in how people want things to be easy, quick, and available [87]. People are using these apps more and more since they rely on smartphones and mobile internet. With only a few taps, they can explore other cuisines and order meals from their favourite eateries. This article is about how to design and build a meal delivery software that makes it easy for people to order food and keep track of deliveries in real time [52]. It intends to fix problems with present systems by adding an integrated framework that makes users happier, helps local food companies, and makes it easier for everyone engaged in the food delivery process to talk to each other. The food delivery ecosystem has a big impact on how people live today, especially in cities where busy work schedules and time constraints make it hard for many people to cook [76]. Even while food delivery systems are popular, users typically have problems like late deliveries, bad order tracking, few restaurant choices, and bad user interfaces. These difficulties show how important it is to have a well-organised, responsive, and dependable application that puts user convenience first while yet being efficient. The goal of this food delivery system is to fill in these gaps by making the process of placing an order and getting it delivered as smooth as possible, with clear communication between restaurants, consumers, and delivery people [70]. The impetus for this study arises from the acknowledgement of the swiftly expanding online food sector and the necessity for digital solutions that guarantee customer happiness and business viability [56]. As more people use online food services for everyday meals, special events, and social gatherings, there is a growing need for systems that can handle a lot of users, process transactions in real time, and make personalised suggestions. Restaurants also benefit greatly from these systems since they get more digital exposure, learn more about their customers, and have more chances to make sales [82]. This technology not only helps customers, but it also gives businesses the power to improve their menus, prices, and marketing based on what users like and don't like.

The paper suggests a meal delivery app that uses a strong technology architecture that combines web and database systems to manage user registrations, restaurant listings, menu administration, and order tracking [60]. The software has separate interfaces for consumers, administrators, and delivery personnel, each with its own set of tools for its own job. Customers may look through restaurants, see their menus, place orders, make secure payments, and see where their order is in real time [77]. Administrators keep the system current and up to date by managing restaurant listings, prices, and client information. Delivery workers may easily see the orders they have been given, keep track of their delivery routes, and update the status of their deliveries [49]. A central database keeps all of these parts in sync and makes sure that information flows correctly across the system, which cuts down on mistakes and delays. The main web framework utilised to build this system is Python and Django. HTML is used to structure the front-end interface, while MySQL is used to handle the database well [75]. Django's Model-View-Template architecture makes it easy to add new features while keeping security and speed high. MySQL makes sure that data is stored and retrieved correctly, which is very important for keeping track of user information, order details, and restaurant data [71]. The system was built with scalability and responsiveness in mind, so it can still work well even as more people and restaurants utilise it.

One of the main points of this paper is to talk about the problems that food delivery apps typically have [81]. A lot of commercial platforms have trouble with order management systems that don't work well, no real-time tracking, user interfaces that aren't always the same, and poor customer service. Users sometimes get frustrated when delivery estimates are wrong, eateries aren't open during busy times, or payments don't go through [53]. Restaurant owners and delivery drivers also have trouble keeping track of orders, finding out where customers are, and making sure deliveries are on time [65]. The suggested application seeks to address these difficulties by facilitating real-time synchronisation between restaurant orders and delivery logistics. The tracking system gives consumers real-time updates on the stages of order preparation, pickup, and delivery, so they always know what's going on [72]. This not only makes things more clear, but it also makes customers more trusting and happy.

This article also looks at how recommendation algorithms can be added to food delivery platforms to make the user experience more personal. The system may propose meals or restaurants that fit each person's tastes by looking at their past orders, reviews, and conduct [57]. This smart recommendation function cuts down on the time users spend looking for good solutions, which makes the site more engaged and easier to use, which keeps users interested [84]. For example, if a user often purchases vegetarian food or likes a certain type of food, like Indian or Italian, the system can suggest comparable options the next time they come [66]. This data-driven customisation keeps customers coming back and makes the platform's relationship with its users stronger.

The system also puts a lot of stress on security and dependability, especially when it comes to handling user data and transactions online [78]. As digital payments become more popular, making sure that payment processing is safe is a critical responsibility. The software uses safe ways to log in, send data securely, and reputable payment channels to keep users' personal and financial information safe [59]. User authentication also makes sure that only confirmed consumers can place orders and see personal information, which lowers the risk of fraud. Administrators can log in securely to run the platform, but delivery agents can only log in to see the deliveries they are responsible for. This kind of multi-layered access control helps keep data safe and operations clear [64]. The meal delivery app's user experience is designed to be clean, easy to use, and work well on a variety of platforms, such as smartphones, tablets, and PCs.

The interface is designed to make it easy to get around, so users can easily look through restaurants, see menus, and place orders without becoming lost [67]. Logos for restaurants, pictures of food, and progress bars for orders are all visual components that make the site more appealing and interesting to use. The responsive design also makes sure that the platform works well on all screen sizes and operating systems, so it works the same way on all devices [55]. The back-end system takes care of the complicated data tasks that are necessary for processing orders, keeping track of restaurant information, and keeping up with client profiles [85]. The MySQL database is set up to hold important information such restaurant menus, item details, prices, user orders, delivery addresses, and transaction histories. Django's ORM (Object-Relational Mapping) makes it easier for the application logic and the database to talk to each other, which speeds up data queries and changes [62]. The system's modular design also makes it possible to add new features in the future, including customer evaluations, discount coupons, or AI-driven demand predictions.

Along with how to technically set up the system, the report also looks at how it would affect society and the economy as a whole. The tool helps the local economy thrive by helping small food sellers and restaurants [73]. It also gives these companies digital prominence. Many small restaurants have a hard time competing with bigger chains since they don't have enough money to advertise [83]. Still, a well-made digital platform can help companies get new consumers and handle online purchases quickly and easily. Also, adding delivery people creates jobs and makes it easier for customers and restaurants to talk to each other, which helps establish a connected digital ecosystem [50]. Another important thing to think about is how scalable the system is [54]. The platform needs to be able to handle a lot of data and many transactions at the same time without slowing down or becoming less reliable as the number of customers and restaurants grows. The app's architecture is made to be scalable, using Django's built-in tools for load balancing and handling requests quickly [79]. Also, future improvements to scalability might include using cloud infrastructure and distributed databases to enable big processes in different parts of the world.

This study also talks about how things could be improved in the future, such as using AI and machine learning for better recommendations and predictive analytics [48]. The algorithm may figure out the busiest times, suggest popular meals, or change delivery routes on the fly to make them more efficient by looking at how customers and restaurants act [80]. Also, adding GPS-based delivery tracking could make real-time location more accurate and help with delivery coordination. These additional features would make the system smarter and more able to meet the changing needs of users [68]. The main purpose of this article is to come up with a realistic, effective, and long-lasting solution that makes the process of ordering food easier for everyone involved [63]. The use of technology in meal delivery shows how digital innovation can help with everyday problems and make life better. The system shows how web technologies, databases, and machine learning can work together to make user-centred apps that are dependable, scalable, and efficient [86].

In conclusion, making this meal delivery app is a big step towards modernising the food service business through digital transformation [58]. The suggested system addresses the shortcomings of current commercial food delivery systems by prioritising user experience, operational efficiency, and safe data management. It uses strong technology and smart design to make sure that customers can easily order meals, restaurants can run their businesses well, and delivery people can do their jobs well [69]. In the end, the software helps make customers happier, helps local businesses expand, and lays the groundwork for future improvements in the field of online food services [51]. With ongoing development and adaption to new technologies, this kind of system could change the way consumers use food delivery services in the digital age, making the whole business more convenient, connected, and innovative [74].

Methodology

The Food Delivery Website was built in a methodical way, starting with requirement analysis, which found important features including user authentication, menu browsing, cart management, order placement, and admin controls. We chose technologies like HTML, CSS, Python Django, and MySQL based on these criteria [89]. During the design phase, user flows, database structures, and page wireframes were made to help with the development process. Using HTML and CSS, front-end development meant making an interface that was responsive and easy to use [91]. Django was used for back-end development, which included user registration, session management, and order processing [92]. Using MySQL, the database was built to record user profiles, menu items, and order details in a way that was quick and easy [88]. Django's built-in features were used to make an admin panel that lets restaurant operators keep track of customer orders and menus. Finally, the system was tested to make sure it worked, responded quickly, and performed well so that users and administrators could order food without any problems [90].

Organisation of the Report

Introduction: This chapter gives a full picture of the project. It talks about the reasons for making a meal delivery service, the issue description, the project's goals, and its scope. It also talks about how the system is useful and how it may be used in real life, as well as a short discussion of the method used.

Literature Survey: This literature survey gives a complete look at the technologies, frameworks, and algorithms that are already being used on food-related websites. It contrasts several ways, like using Django as a framework, employing SQL databases instead of MongoDB, and mixing HTML and CSS with Python. This chapter also talks about the problems and inadequacies in present systems, which shows why the suggested system is needed.

System Analysis: This chapter talks about what the system needs, both in terms of how it works and how it doesn't work. It involves a feasibility assessment (technical, operational, and economic) and looks at the problem to figure out what the system needs to do. The chapter talks about the hazards and limits of the system.

System Design: This part talks about the website's main structure and parts that make up the food delivery service. It has block diagrams, data flow diagrams (DFD), system workflows, and modular design. This chapter describes how the system is set up and how the many parts work together. It covers things like dynamic menus, order customisation, multiple payment options, and GPS tracking of deliveries.

Methodology and Implementation: This chapter describes the suggested suggestion system, which is made up of numerous important modules that work together to give users customised recommendations. From gathering data to making and testing recommendations, each module has a different job to do in the entire workflow.

System Testing and Results: This part talks about how the system was tested to make sure it was correct, worked well, and was strong. It talks about the different ways to test (unit testing, integration testing, etc.), the datasets that were utilised, and the kinds of data cleaning that need to be done and looked at for Data pre-processing.

Conclusion and Future Work: This chapter sums up the main results of the project and checks to see if the goals were reached. It also talks about the problems with the current system and gives ideas on how to make it better in the future, including making database management more efficient.

References: This is a list of all the books, research papers, websites, and other sources that were used in the project, in a standard citation style (APA/IEEE/etc).

Literature Review

Digital platforms have changed the food service business in a big way, especially with the addition of food delivery apps. Many research and current systems show how important, structured, user-friendly, and difficult it is to make these kinds of apps [11]. Uber Eats, DoorDash, Swiggy, and Zomato are some of the most popular meal delivery services. They have set standards for things like user experience, real-time tracking, and easy payment mechanisms. These apps give you information about important features like dynamic menus, order personalisation, numerous payment options, and GPS tracking of your delivery [32]. According to a study by [Xu et al., 2019], meal delivery apps that work well put a lot of effort into User Interface (UI) and User Experience (UX) design to get and keep clients. A user-friendly, well-designed interface makes people want to use it more often and makes them happier.

A study found that real-time tracking and good logistics are important for building customer trust and making service more efficient. For delivery people to find their way and for consumers to keep track of their orders, it is highly important that the app works with map APIs like Google Maps [1]. A look at safe transaction systems demonstrates that adding trusted payment gateways like Stripe, Razorpay, or PayPal is necessary to get users to trust you [43]. To keep sensitive information safe, data security standards like SSL encryption, token-based authentication, and data anonymisation are needed [21]. But platforms like Google Books and BookBub depend a lot on content-based systems that look at book metadata and user preferences. Researchers have also used topic modelling (such Latent Dirichlet Allocation) and neural networks to make book recommendations better [34].

As the field of recommender systems keeps changing, there are a few aspects that need to be looked at more closely [22]. To start, more and more people are interested in using deep learning with standard recommendation methods. Researchers are looking into Recurrent Neural Networks (RNNs) and Convolutional Neural Networks (CNNs) to see if they can grasp how users behave over time and how content is related to each other [42]. Also, explainability in recommender systems is becoming more and more important, especially in areas like e-commerce and digital media, where customers want recommendations that are clearer and easier to understand [12]. Finally, new problems including ethical issues and reducing bias are becoming more important, therefore researchers need to make systems that give fair and varied recommendations [47].

TF-IDF has been a key part of content-based recommendation systems since it can rank words in documents based on how often they appear and how important they are [31]. It lets you turn text input into numbers, which you can then use to compare how similar two things are. Cosine similarity is a common way to find out how similar two things are based on their content. It does this by finding the cosine of the angle between two vectors [2]. These techniques have been effectively utilised in areas like as text mining, document retrieval, and, more recently, in content-based recommendation systems for literature and films.

Project Description

There are a lot of food delivery systems on the market right now, and they all have a lot of features for users, restaurants, and delivery people [10]. These current systems are used as models for making new applications because they give useful information about how they work, what their strengths are, and what their weaknesses are. For example, Swiggy is known for its speedy delivery network and real-time GPS monitoring, while Zomato lets you read restaurant reviews and look through a thorough menu [30]. Uber Eats works perfectly with the rest of Uber's services, making delivery easy with real-time tracking and a variety of payment choices. DoorDash and Grubhub each have their own special features, such as the ability to order food in groups and set up delivery ahead of time.

The suggested food delivery software intends to fix the problems with current platforms by giving customers, restaurants, and delivery agents a better, more efficient, and scalable way to order meals [7]. The app will focus on having a clear and easy-to-use layout that makes it easier for users to find their way around and includes personalised features like suggestions based on their order history and preferences. It will have advanced search criteria that let customers easily identify restaurants by cuisine, ratings, price range, and delivery time [46]. This will make it easier to browse.

Real-time GPS tracking will be a big part of the system [23]. This will let consumers see where their orders are at all times, from when they are being prepared to when they are delivered. It will also give delivery agents the best routes to take to get there faster. The app will use dynamic pricing based on things like demand, delivery distance, and time of day [33]. It will also have promotional offers and reward programs to get people to use it again [3]. Users will be able to make safe transactions since trustworthy gateways will support secure payment methods like credit and debit cards, digital wallets, and UPI.

Advantages

Better Accuracy: The hybrid technique combines collaborative filtering with content-based filtering to make sure that recommendations are more accurate and tailored to each user, which

lowers the likelihood of getting ideas that aren't relevant [41].
Better at Dealing with the Cold Start Problem: Content-based filtering helps solve the cold start problem by using item metadata (such genre or category) to suggest new items, even when there isn't much data on how users interact with them.

System Specification
For every computer task, a good system is very important [29]. To make sure everything works right, you need the right gear and software [20]. Each aspect, from powerful processors to necessary software packages, helps establish an atmosphere that is good for machine learning and data analysis jobs.
Processor: Intel 10th gen or above with i5 or higher • Ethernet connection (LAN) OR a wireless adapter (Wi-Fi) • Hard Drive: At least 300 GB; 500 GB or more is better

- Memory (RAM): At least 8GB is needed; 32GB or more is best.
- Operating System: The system works with Windows, Linux, and macOS. Linux is the best choice for data science environments since it works better and is easier to use.
- Programming Languages: We will use Python 3.x to develop the recommendation algorithms because it has a lot of libraries for machine learning and data science, such as scikit-learn, TensorFlow, pandas, and NumPy.
- scikit-learn: For making models that use collaborative filtering, content-based filtering, and both [19]. NumPy and Pandas For changing data, preparing it, and doing matrix operations.
- TensorFlow/Keras (optional): For recommendation models based on deep learning (if you're using neural networks).
- Database/Storage: A SQL or MYSQL database (like MySQL or MongoDB) to keep track of user data, item metadata, and interactions, or cloud storage options like AWS S3 for scalability.

Proposed Work

Figure 1. Architecture Diagram

During the design process, different diagrams and models are made to show how the system's parts work together and how data flows through it [35]. UML, sequence, use case, and data flow diagrams are some of the diagrams that help stakeholders and development teams understand how the system is designed and how it works [13]. The design process is quite important for making sure that the software solution meets its goals in a skilled and effective way (Figure 2).

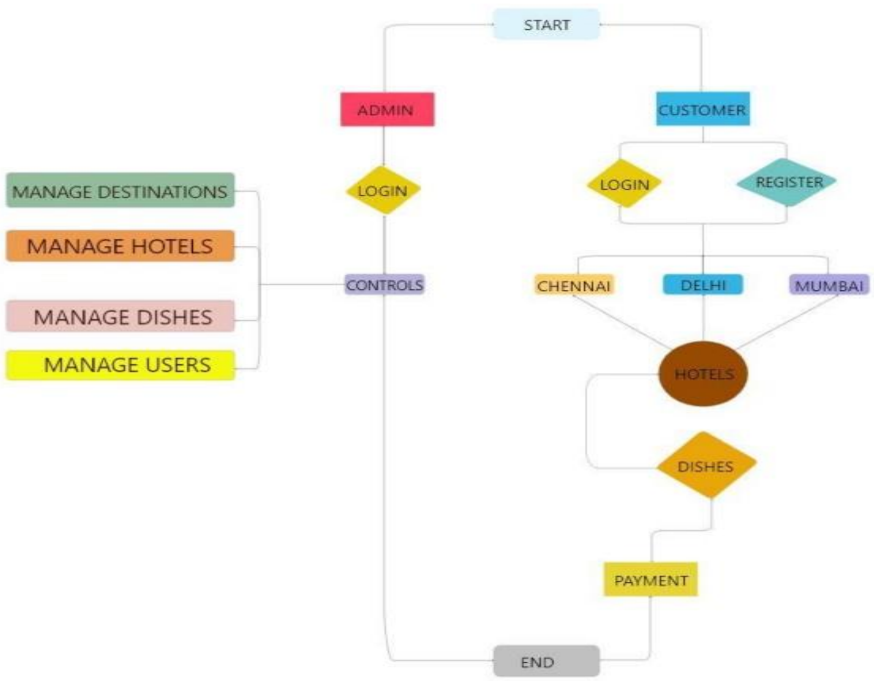

Figure 2. Data Flow Diagram

Picture 1 The Data Flow Diagram (DFD) shows how information moves around on the Food Delivery Website. Users can register, log in, look through menus, and place orders to use the system [9]. The system handles these tasks and talks to the MySQL database to save and get back user data, menu details, and order information [14]. The admin panel lets administrators change the menu and check on the status of orders. It also talks to the database. The DFD makes it apparent how data goes between users, the system, the database, and the admin. This makes sure that everything runs well and that the data stays safe (Figure 2) [40].

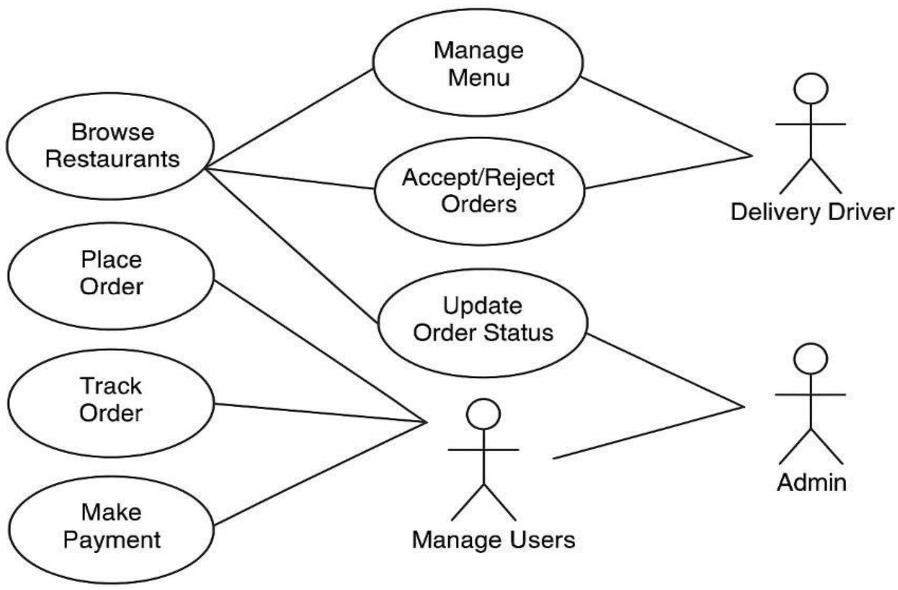

Figure 3. UML Diagram

Figure 3 The UML (Unified Modelling Language) Diagram for the Food Delivery Website shows how the system is set up and how it works [24]. It has a lot of different parts, like users, administrators, food products, orders, and the connections between them. Class diagrams show the properties and functions of things like User, Admin, Menu, and Order. Use case graphics explain how people use the system and how admins work with it [4]. The UML diagrams work together to give a clear and organised picture of how the system is designed, which makes it easier to create, understand, and add to in the future.

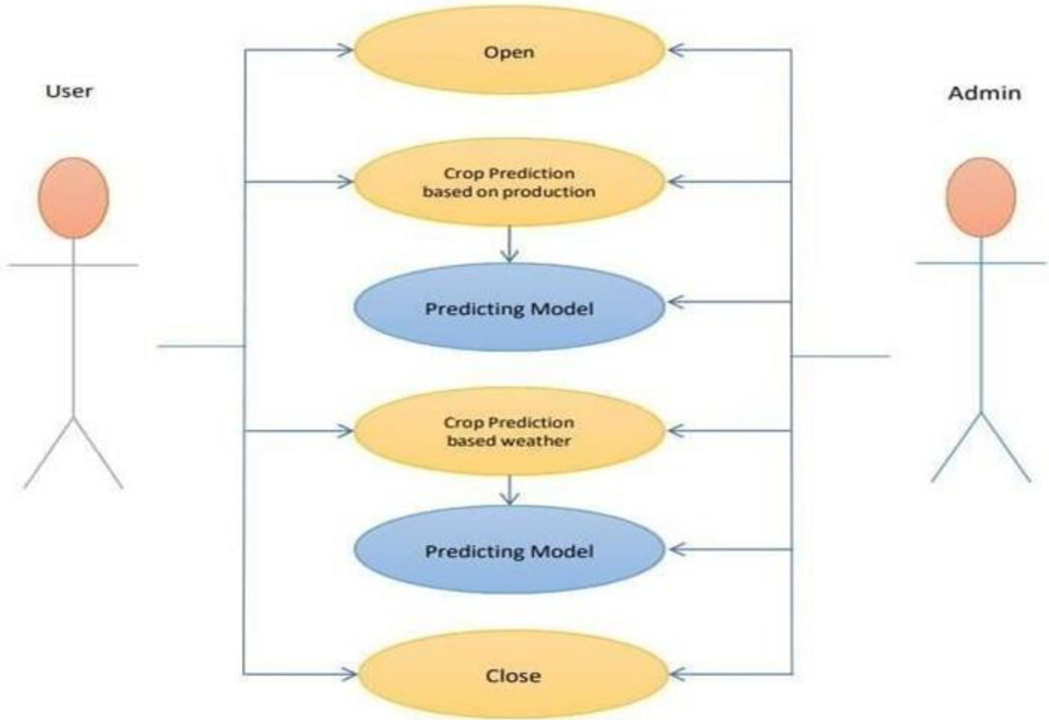

Figure 4. Use Case Diagram

Figure 4 shows how users, administrators, and the system interact with each other on the Food Delivery Website [18]. Users can sign up, sign in, look at the menu, add things to their cart, place orders and check on the status of their orders [36]. Admins can log in, change the menu items, see what customers have ordered, and change the status of orders.

Module Description

The suggested recommendation system has a number of important parts that work together to give users tailored suggestions. Each module has a different job to do in the entire workflow, from gathering data to making and testing recommendations [16]. The key parts of the system are described below. This module's job is to get the data it needs from different places. It gets data about how users interact with items (such ratings, reviews, and clicks) and metadata about items (like category, genre, and tags) from other datasets or databases. The module makes sure that the data is organised and ready to be processed [45]. This module will use the platform's API to get real-time data if the system is set up for a certain platform, like an e-commerce site or a streaming service. This module cleans and preprocesses the data after it has been collected to make sure it is in the right format for training the recommendation algorithms. Some of the most important things to do in this module are:

- Handling missing values in the dataset.
- Normalising numerical features (e.g., ratings or prices).
- Encoding categorical variables (e.g., item genre or tags).
- Splitting the dataset into training and testing sets for model evaluation. This step ensures that the data is ready for the recommendation engine to generate accurate predictions.

The recommendation engine is the main part of the system [39]. It uses multiple algorithms to make tailored suggestions for each user [27]. It has Collaborative Filtering (User-based and Item-based), which makes suggestions based on how users and items interact with each other and how similar users or items are to each other. Content-Based Filtering: This type of filtering suggests items based on the characteristics and features of objects that the user has already looked at. Hybrid Model: This method combines collaborative filtering and content-based filtering to get over the problems with each and give more accurate and varied recommendations [8]. The engine will learn and improve based on the data it has, and it will make a list of suggested things for each user. The assessment module checks how well the recommendation system works by comparing the recommendations it makes to what users have already said they like [25]. It uses key performance indicators including Precision, Recall, and F1-Score to see how relevant the top-N recommendations are.

The user interface (UI) module lets people use the recommendation system [37]. This might be a web or mobile interface that shows the user tailored suggestions. Users would be able to rate goods, see recommended content, and give comments through the UI. This feedback may be utilised to improve the recommendation engine even further [15]. To make things easier, this module may be built with simple web technologies like HTML, CSS, and JavaScript, or it could be added to an already existing app.

This module lets the system learn from what users say and get better over time. Users can give input on suggestions by rating them, like or disliking them, or writing reviews. The system can then utilise this feedback to improve its models and change to fit what users want [5]. To make the recommendation engine better all the time based on how users interact with it, you can utilise techniques like reinforcement learning. The security and privacy module makes sure that all user data is handled in accordance with privacy laws like the GDPR and CCPA. It uses the right encryption and anonymisation methods to keep sensitive user data safe, like personal information and interaction history. It also makes sure that user preferences are kept safe and only used to make suggestions.

Data Collection

Collecting data is an important part of making a food delivery app because it helps decide what features, functions, and user experiences the app will have. Customers, restaurants, and delivery personnel will all be able to use the data that is collected. It will also help the backend system, analytics, and making business decisions. Here are the main sorts of data and sources that are used in the procedure. After the data is gathered, it is pre-processed to make sure it is in the right format for the recommendation algorithms. This means:

Cleaning the data Involves Removing duplicates, handling missing values, and filtering out irrelevant data.

Feature extraction and encoding: One-hot encoding or label encoding are two ways to encode categorical data, like genres and tags. To make sure that the numbers are consistent, they are normalised [28]. Data splitting: The dataset is split into two halves, one for training and one for testing, to see how well the recommendation model works.

Building the Recommendation Engine: The recommendation engine is the most important part of the system. It uses a mix of algorithms to make customised recommendations [17]. The following methods are put into action. Collaborative Filtering (User-Based and Item-Based): The system uses algorithms like Nearest Neighbours (KNN) to find users or items that are similar to each other and make recommendations based on how they have interacted with each other in the past [26].

Content-Based Filtering: The system suggests items that are similar to ones the user has already looked at, based on the item's properties (such genre, category, or tags). This method finds out how similar two things are by looking at their features.

Hybrid Model: A hybrid approach combines collaborative filtering with content-based filtering to make sure that the system can make reliable recommendations for new or less frequently engaged objects [44]. Training and Optimising the Model: After the algorithms are set up, the training dataset is used to train the models.

The algorithms' hyperparameters are adjusted to make them work better [38]. Matrix Factorisation techniques, such Singular Value Decomposition (SVD), are used to break down the user-item interaction matrix into its constituent parts. These parts are called latent factors and they show user preferences and item characteristics [6]. K-fold Cross-validation is done to make sure that the model works effectively with new data and doesn't fit too closely to the training data.

Results and Discussion

The suggested recommendation system is meant to work well in terms of speed, accuracy, and how it uses resources [95]. It uses optimal algorithms including collaborative filtering, content-based filtering, and hybrid models to give consumers accurate and tailored choices. These methods cut down on the time it takes to provide suggestions and make users happier by giving them results that are useful [97]. The system can handle huge datasets quickly by using preprocessing, matrix factorisation, and indexing approaches. This means that response times stay fast even as user interactions increase. Also, using assessment criteria like precision, recall, and RMSE makes it easier to keep an eye on and improve the system's performance over time [93]. In general, the proposed method makes it easier for users to make decisions while keeping speed and accuracy high. The current approach often needs people to take orders over the phone or through slow third-party apps, which can cause mistakes, delays, and a small number of customers. Customers typically have problems including not getting real-time updates on their orders, menus that aren't up to current, and a bad experience [96]. The suggested solution includes a completely automated, easy-to-use web platform where clients can quickly look through menus, place orders, and keep track of them in real time [94]. It makes things more accurate, speeds up service, makes customers happier, and provides restaurant owners full control over managing menus and orders through a separate admin interface [98].

Conclusion and Future Enhancements

This article proposes an end-to-end fully convolutional network designed to directly simulate the complex nonlinear relationship between facial photographs and doodles. Experimental results highlight the success of the fully convolutional network in proficiently tackling this complex task, enabling pixel-wise predictions with both efficacy and efficiency. Future improvements will focus on making the current loss function better and testing it on different databases. We will also look into how our approach and non-photorealistic rendering methods are related.

References

[1] K. Zhang, Z. Zhang, Z. Li, and Y. Qiao, “Joint face detection and alignment using multi-task cascaded convolutional networks,” arXiv [cs.CV], vol. 23, no. 10, pp. 1499-1503, 2016.

[2] F. Schroff, D. Kalenichenko, and J. Philbin, “FaceNet: A unified embedding for face recognition and clustering,” in 2015 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Boston, Massachusetts, United States of America, 2015.

[3] O. M. Parkhi, A. Vedaldi, and A. Zisserman, Deep Face Recognition. British Machine Vision Conference (BMVC). British Machine Vision Association, United Kingdom, 2015.

[4] M. Amsaveni and M. Saranya, “Energy efficient cluster head selection in WSN – A survey,” Naturalista Campano, vol. 28, no. 1, 2024. [Online]. Available: https://museonaturalistico.it/index.php/journal/article/view/569

[5] A. Manigandan and M. Saranya, “Secretary Bird Optimization with Differential Evolution (SBODE) and Trust Energy Aware Clustering Routing (TREACR) Protocol for Wireless Sensor Network (WSN),” International Journal of Computer Networks and Applications (IJCNA), vol. 12, no. 2, pp. –, Mar.–Apr. 2025.

[6] A. Manigandan and M. Saranya, “Energy efficient wireless sensor network with hybrid mutation albatross optimization algorithm–based cluster head selection,” International Journal of Advanced Science and Engineering, vol. 11, no. 4, pp. 4543–4556, 2025.

[7] A. Manigandan and M. Saranya, “A gray hole attack detection and cluster head selection techniques for wireless sensor networks,” in Proc. 16th Int. Conf. on Computing, Communication and Networking Technologies (ICCCNT 2025), IIT Indore, Madhya Pradesh, India, Jul. 6–11, 2025, pp. 1–6.

[8] A. Dhanai, H. S. Bagde, R. Gera, K. Mukherjee, C. Ghildiyal, and H. Yadav, “Case report on irritational fibroma,” Journal of Pharmacy and Bioallied Sciences, vol. 16, suppl. 1, pp. S960–S962, Feb. 2024.

[9] H. Bagde, A. Dhopte, F. Bukhary, N. Momenah, F. Akhter, O. Mahmoud, K. P. Shetty, M. A. Shayeb, H. Abutayyem, and M. K. Alam, “Monkeypox and oral lesions associated with

its occurrence: a systematic review and meta-analysis," F1000Research, vol. 12, p. 964, Mar. 2024.

[10] H. Bagde, R. S. Karki, S. Husain, S. Khan, V. Haripriya, and P. Purwar, "Evaluation of microbiological flora in endo-perio lesions before and after treatment," Journal of Pharmacy and Bioallied Sciences, vol. 17, suppl. 2, pp. S1707–S1709, Jun. 2025.

[11] B. Shyamsukha, H. Bagde, A. Sharan, M. Choudhary, A. Duble, and A. V. Dhan, "Evaluating the potential of ChatGPT as a supplementary intelligent virtual assistant in periodontology," Journal of Pharmacy and Bioallied Sciences, vol. 17, suppl. 2, pp. S1415–S1417, Jun. 2025.

[12] H. S. Bagde, M. K. Alam, A. K. A. Alhamwan, H. M. H. Aljubab, F. F. A. Alrashedi, D. H. M. Aljameeli, and M. G. Sghaireen, "The effect of a low-carbohydrate diet on periodontal health and inflammation in patients with type 2 diabetes," Journal of Pharmacy and Bioallied Sciences, vol. 16, suppl. 1, pp. S641–S643, Feb. 2024.

[13] H. S. Bagde, M. K. Alam, Y. E. M. Almohammed, S. M. M. Almaqawid, A. W. N. Alanazi, F. T. F. Alanazi, and M. G. Sghaireen, "The efficacy of platelet-rich plasma as an adjunct to bone grafting in alveolar ridge preservation following tooth extraction," Journal of Pharmacy and Bioallied Sciences, vol. 16, suppl. 1, pp. S564–S566, Feb. 2024.

[14] S. B. Mangalekar, H. S. Bagde, M. Sale, S. V. Jambhekar, C. Patil, and C. V. Deshmukh, "Comparing laser-assisted and conventional excision in the management of oral soft lesions: a prospective clinical study," Journal of Pharmacy and Bioallied Sciences, vol. 16, suppl. 1, pp. S859–S861, Feb. 2024.

[15] M. K. Alam, H. S. Bagde, A. K. A. Alhamwan, H. M. H. Aljubab, F. F. A. Alrashedi, D. H. M. Aljameeli, and M. G. Sghaireen, "Comparing the long-term success rates of immediate implant placement vs delayed implant placement in patients with periodontally compromised teeth," Journal of Pharmacy and Bioallied Sciences, vol. 16, suppl. 1, pp. S626–S628, Feb. 2024.

[16] H. S. Bagde, M. K. Alam, Y. E. M. Almohammed, S. M. M. Almaqawid, K. K. Ganji, and M. G. Sghaireen, "Comparing the clinical and radiographic outcomes of two different surgical approaches for treating infrabony defects in chronic periodontitis patients," Journal of Pharmacy and Bioallied Sciences, vol. 16, suppl. 1, pp. S567–S569, Feb. 2024.

[17] A. Sharan, B. Pawar, H. Bagde, T. K. Chawla, A. V. Dhan, B. Shyamsukha, and S. Sharma, "Comparative evaluation of dentin hypersensitivity reduction over one month after a single topical application of three different materials: a prospective experimental study," Journal of Pharmacy and Bioallied Sciences, vol. 16, suppl. 4, pp. S3405–S3407, Dec. 2024.

[18] J. Prakash, T. Sinha, H. Bagde, N. Rajegowda, S. Bhat, A. Dhopte, M. Cicciù, and G. Minervini, "Evidence-based assessment of temporomandibular disorders in complete denture versus partial denture users: a systematic review," Minerva Dental and Oral Science, Sep. 2025.

[19] A. Annan, A. L. Eiden, D. Wang, J. Du, M. Rastegar-Mojarad, V. K. Nomula, and X. Wang, "Evaluating large language models for sentiment analysis and hesitancy analysis on vaccine posts from social media: Qualitative study," JMIR Formative Research, vol. 9, p. e64723, 2025.

[20] I. A. Mohammed, "Artificial Intelligence in Supplier Selection and Performance Monitoring: A Framework for Supply Chain Managers," Educational Administration: Theory and Practice, vol. 29, no. 3, pp. 1186–1198, 2023.

[21] I. A. Mohammed, "The Role of Artificial Intelligence in Enhancing Business Efficiency and Supply Chain Management," Journal of Information Systems Engineering and Management, vol. 10, no. 10s, pp. 509–518, Feb. 2025.

[22] I. A. Mohammed, "AI-Powered Risk Management Frameworks for Ensuring Supplier Quality in Carbon Capture and Energy Storage Supply Chains," International Journal of Intelligent Systems and Applications in Engineering, vol. 12, no. 1, pp. 854–, Dec. 2023.

[23] I. A. Mohammed, "Optimizing Carbon Capture Supply Chains with AI-Driven Supplier Quality Management and Predictive Analytics," Journal of Next-Generation Research 5.0, Dec. 2024.

[24] I. A. Mohammed, "Machine Learning-Driven Predictive Models for Enhancing Supplier Reliability in Renewable Energy Storage Supply Chains," International Journal of Intelligent Systems and Applications in Engineering, pp. 767–770, 2022.
[25] N. Gupta, M. Adawadkar, I. A. Mohammed, S. Verma, and M. Dubey, "Predictive Insights: Leveraging Artificial Intelligence for Strategic Business Decision-Making," Advances in Consumer Research, vol. 2, pp. 98–105, 2025.
[26] K. Chitra, S. S. Priscila, E. S. Soji, R. Rajpriya, B. Gayathri, and A. Chitra, “Transforming electrical simulation and management with smart grid technologies,” International Journal of Engineering Systems Modelling and Simulation, vol. 16, no. 4, pp. 241–253, 2025.
[27] M. V. Soosaimariyan, H. L. Allasi, K. Chitra, and J. B. Gnanadurai, “Enhanced EMG-based hand gesture recognition by using generalized deep infomax networks,” Journal of Sensors, vol. 2025, no. 1, p. 9496890, 2025.
[28] K. Lakshmi and K. Chitra, “Stress Net: Multimodal stress detection using ECG and EEG signals,” Journal of Data Science, vol. 2024, no. 59, pp. 1–8, 2024.
[29] S. Rishabh, K. Chitra, and C. S. Yap, “A study on non-fungible tokens marketplace for secure management,” INTI Journal, vol. 2024, no. 18, pp. 1–8, 2024.
[30] S. Shreyash, S. Gaur, K. Chitra, and M. Y. N. Zuhaili, “EasyLearnify – A student study portal,” INTI Journal, vol. 2024, no. 17, pp. 1–6, 2024.
[31] S. K. R. Padur, “Intelligent Resource Management: AI Methods for Predictive Workload Forecasting in Cloud Data Centers,” J. Artif. Intell. Mach. Learn. & Data Sci., vol. 1, no. 1, pp. 2936–2941, 2022.
[32] S. K. R. Padur, “Online Patching and Beyond: A Practical Blueprint for Oracle EBS R12.2 Upgrades,” Int. J. Sci. Res. Sci. Eng. Technol., vol. 2, no. 3, pp. 75–87, 2016.
[33] S. K. R. Padur, “Engineering Resilient Datacenter Migrations: Automation, Governance, and Hybrid Cloud Strategies,” Int. J. Sci. Res. Comput. Sci. Eng. Inf. Technol., vol. 2, no. 1, pp. 340–348, 2017.
[34] S. K. R. Padur, “From Centralized Control to Democratized Insights: Migrating Enterprise Reporting from IBM Cognos to Microsoft Power BI,” Int. J. Sci. Res. Comput. Sci. Eng. Inf. Technol., vol. 6, no. 1, pp. 218–225, 2020.
[35] S. K. R. Padur, “Deep Learning and Process Mining for ERP Anomaly Detection: Toward Predictive and Self-Monitoring Enterprise Platforms,” Int. J. Sci. Res. Comput. Sci. Eng. Inf. Technol., vol. 7, no. 5, pp. 240–246, 2021.
[36] S. K. R. Padur, “AI-Augmented Enterprise ERP Modernization: Zero-Downtime Strategies for Oracle E-Business Suite R12.2 and Beyond,” Int. J. Sci. Res. Comput. Sci. Eng. Inf. Technol., vol. 9, no. 3, pp. 886–892, 2023.
[37] S. K. R. Padur, “Empowering Developer & Operations Self-Service: Oracle APEX + ORDS as an Enterprise Platform for Productivity and Agility,” Int. J. Sci. Res. Sci. Eng. Technol., vol. 4, no. 11, pp. 364–372, 2018.
[38] S. K. R. Padur, “The Future of Enterprise ERP Modernization with AI: From Monolithic Systems to Generative, Composable, and Autonomous Platforms,” J. Artif. Intell. Mach. Learn. & Data Sci., vol. 3, no. 1, pp. 2958–2961, 2025.
[39] S. K. R. Padur, “Automation-First Post-Merger IT Integration: From ERP Migration Challenges to AI-Driven Governance and Multi-Cloud Orchestration,” Int. J. Sci. Res. Sci. Eng. Technol., vol. 12, no. 5, pp. 270–280, 2025.
[40] S. K. R. Padur, “Network Modernization in Large Enterprises: Firewall Transformation, Subnet Re-Architecture, and Cross-Platform Virtualization,” Int. J. Sci. Res. Sci. Eng. Technol., vol. 2, no. 5, 2016.
[41] S. K. Somayajula, "Enterprise Data Migration Success Patterns: Lessons from Large-Scale Transformations," International Journal of Research in Computer Applications and Information Technology (IJRCAIT), vol. 8, no. 1, pp. 757-776, Jan.-Feb. 2025.
[42] S. K. Somayajula, "Demystifying Modern Data Warehousing: From Traditional to Cloud-Native Solutions," International Journal of Scientific Research in Computer Science, Engineering and Information Technology, 2025.
[43] S. K. Somayajula, "Building a Career in Enterprise Data Architecture: A Practical Guide,"

International Research Journal of Modernization in Engineering Technology and Science (IRJMETS), vol. 7, no. 1, Jan. 2025.
[44] S. K. Somayajula, "Advanced ETL Optimization: A Framework for Next-Generation Data Integration," International Journal of Computer Engineering and Technology (IJCET), vol. 16, no. 1, pp. 381-406, Jan.-Feb. 2025.
[45] S. Somayajula and A. Orlovsky, "Proof, Truth and Contradiction in the System and Meta-System: Comprehensive Mathematical Solutions and Implementation Framework," 2025.
[46] P. Nutalapati, "Automated Incident Response Using AI in Cloud Security," Journal of Artificial Intelligence, Machine Learning and Data Science, vol. 2, no. 1, pp. 1301–1311, 2024
[47] P. Nutalapati, "Data Leakage Prevention Strategies in Cloud Computing," European Journal of Advances in Engineering and Technology, vol. 8, no. 9, pp. 118–123, 2025.
[48] P. Nutalapati, "Security Considerations for Hybrid Cloud Deployments in Fintech Using Blockchain," Journal of Artificial Intelligence, Machine Learning and Data Science, vol. 1, no. 1, URF Publishers, 2025.
[49] P. Nutalapati, "Zero Trust Architecture in Cloud-Based Fintech Applications," Journal of Artificial Intelligence & Cloud Computing, vol. 2, no. 1, pp. 1–8, 2023.
[50] P. Nutalapati, J. R. Vummadi, S. Dodda and N. Kamuni, "Advancing Network Intrusion Detection: A Comparative Study of Clustering and Classification on NSL-KDD Data," 2025 International Conference on Data Science and Its Applications (ICoDSA), Jakarta, Indonesia, 2025, pp. 880-885.
[51] P. Nutalapati, S. M. Dhavale, A. Shrivastava, R. V. S. Praveen, H. K. Vemuri and R. RiadHwsein, "IoT and Machine Learning-Enhanced Energy Management in Enabled Smart Grids for Predictive Load Balancing," 2025 World Skills Conference on Universal Data Analytics and Sciences (WorldSUAS), Indore, India, 2025, pp. 1-6.
[52] P. Nutralapati, "Disaster Recovery and Business Continuity Planning in Cloud-Blockchain Infrastructures," SSRN Electron. J., Jun. 2020. Available: https://ssrn.com/abstract=5219038.
[53] V. K. R. Bandaru and D. S. Gondi, "Ensuring Data Privacy and Security in Health Tech: Challenges and Solutions in the Age of Digital Health," SSRN, 2020. [Online]. Available: https://ssrn.com/abstract=5112043
[54] D. Sai and H. Mashetty, "Enhancing Federated Learning Evaluation: Exploring Instance-Level Insights with SQUARES in Image Classification Models," J. Electrical Systems, vol. 20, no. 7s, pp. 2516–2523, 2024.
[55] K. Sathish, D. S. Gondi, V. K. R. Bandaru, K. K. Kumar, K. P. Rao, and M. Bhutani, "Artificial Intelligence and Machine Learning in Space Cyber Defense," in Advanced Cyber Defense for Space Missions and Operations: Concepts and Applications, pp. 61–84, 2025.
[56] D. S. Gondi, V. K. R. Bandaru, K. Sathish, K. Kanthi Kumar, N. Ramakrishnaiah, and M. Bhutani, "Balancing Innovation with Patient Privacy Amid Ethical Challenges of AI in Health Care," in Proc. Int. Conf. on Innovative Computing and Communication, Singapore, Feb. 2025, pp. 555–576.
[57] R. Raj, D. S. Gondi, S. R. Nitnaware, S. Banerjee, S. Athithan, and Arpita, "Remote Sensing–Based Food Processing for Changing Climatic Conditions," Remote Sensing in Earth Systems Sciences, vol. 8, no. 2, pp. 484–495, 2025.
[58] D. S. Gondi, "Designing Resilient and Scalable Systems for Green Healthcare IoT," in Development and Management of Eco-Conscious IoT Medical Devices, IGI Global Scientific Publishing, USA, 2026, pp. 155–182.
[59] D. S. Gondi, "Strategies for Implementing Sustainability Practices in Smart Hospitals," in Responsible Innovation in Smart Healthcare: AI, IoT, and Ethical Sustainability Practices, IGI Global Scientific Publishing, USA, 2026, pp. 307–338.
[60] V. P. Ramesh Kumaar and B. Balaji, "Asian Research Consortium," Asian Journal of Research in Social Sciences and Humanities, vol. 6, no. 8, pp. 1474–1491, Aug. 2016.
[61] V. P. Rameshkumaar, "An Analytical Study on the Usage and Effects of Transportation Management of Top 3 MNC Companies During and Before Pandemic Crisis," International

Journal of Aquatic Science, vol. 12, no. 3, pp. 2619–2629, Jun. 1, 2021.
[62] V. P. Rameshkumaar, D. Ganesan, S. Revathy, R. Karthikeyan, and P. P. Devi, "Evaluating the impact of artificial intelligence on logistics and supply chain efficiency," Indian Journal of Natural Sciences, vol. 15, no. 88, pp. 88823–88828, Feb. 2025.
[63] V. P. Rameshkumaar, R. A. Arul Raja, S. M. Shavalliuddin, and S. J. Fakhriddin Ugli, "Phyto assisted fabrication of highly stable titania nanoparticles for environmental purification applications," AIP Conf. Proc., vol. 3306, p. 040004, 2025.
[64] P. P. Devi, "Customer loyalty as the focus of insurance Industry," Business Perspectives, vol. 10, no. 1, pp. 79-84, 2008.
[65] P. P. Devi, C. V. Sabiya, N. M., A. S. Rouban, and S. Sanjay, "Green consumerism from the perspective of theory of planned behaviour," Cahiers Magellanes-Ns, vol. 6, no. 2, 2024.
[66] P. P. Devi, D. Ganesan, R. Hemamalini, A. Ashwathi, and V. P. Rameshkumaar, "The influence of virtual technology on production systems: An evaluation of workflow improvement and cost reduction," Indian Journal of Natural Sciences, vol. 15, no. 87, pp. 83891–83896, Dec. 2024.
[67] S. Y. Malathi and R. B. Geeta, "Classification of knee X-ray images by severity of osteoarthritis using skip connection based ResNet101," Int. J. Intell. Eng. Syst., vol. 16, no. 5, p. 738, 2023.
[68] S. Y. Malathi and R. B. Geeta, "A novel method on CNN-LSTM to characterize knee osteoarthritis from radiography," Proc. Natl. Acad. Sci., India, Sect. B: Biol. Sci., 2023.
[69] K. S. Sharada, R. B. Geeta, K. K. Manohara, and S. Y. Malathi, "Insight analysis of deep learning and a conventional standardized evaluation system for assessing rice crop's susceptibility to salt stress during the seedling stage," SN Comput. Sci., 2023.
[70] S. Y. Malathi, R. B. Geeta, and K. S. Sharada, "Diagnosing and grading knee osteoarthritis from X-ray images using deep neural angular extreme learning machine," Proc. Indian Natl. Sci. Acad., vol. 90, no. 2, 2024.
[71] S. K. Shiragudikar, G. Bharamagoudar, K. K. Manohara, S. Y. Malathi, and G. S. Totad, "Predicting salinity resistance of rice at the seedling stage: An evaluation of transfer learning methods," in Intelligent Systems in Computing and Communication (ISCComm 2023), CCIS, vol. 2231, Cham: Springer, 2025.
[72] S. Malathi, G. Bharamagoudar, S. K. Shiragudikar, and G. S. Totad, "Predictive models for the early diagnosis and prognosis of knee osteoarthritis using deep learning techniques," in Intelligent Systems in Computing and Communication (ISCComm 2023), CCIS, vol. 2231, Cham: Springer, 2025.
[73] S. K. Shiragudikar and G. Bharamagoudar, "Enhancing rice crop resilience: Leveraging image processing techniques in deep learning models to predict salinity stress of rice during the seedling stage," Int. J. Intell. Syst. Appl. Eng., vol. 12, no. 14s, pp. 116–124, 2024.
[74] S. G. K. Peddireddy, "Advancing Threat Detection in Cybersecurity through Deep Learning Algorithms," FMDB Transactions on Sustainable Intelligent Networks., vol.1, no. 4, pp. 190–200, 2024.
[75] S. G. K. Peddireddy, "Integrating AI for Proactive Network Defense against Emerging Security Vulnerabilities," FMDB Transactions on Sustainable Computer Letters., vol. 2, no. 4, pp. 232–241, 2024.
[76] S. G. K. Peddireddy, "Optimizing Resource Allocation in Multi-Cloud Environments for Cost Efficiency and Scalability," FMDB Transactions on Sustainable Computing Systems., vol. 2, no. 4, pp. 167–177, 2024.
[77] V. Hiremath, "Quantum Networking: Strategic Imperatives for Enterprises and Service Providers in the Emerging Quantum Era," Journal of Computational Analysis and Applications (JoCAAA), vol. 31, no. 3, pp. 617–631, Dec. 2023.
[78] N. J. Maiti, S. Ganguly, K. Choowongkomon, S. Seetaha, S. Saehlee, and T. Aiebchun, "Synthesis, in vitro Anti-HIV-1RT evaluation, molecular modeling, DFT and acute oral toxicity studies of some benzotriazole derivatives," J. Struct. Biol., vol. 216, no. 2, p. 108094, 2024.
[79] N. J. Maiti and S. Ganguly, "Synthesis, spectral analysis, antimicrobial evaluation, molecular

modelling, DFT, TD-DFT and SAR studies of novel 4,5,6,7-tetrabromo-1H-benzo[d][1,2,3]triazole derivatives," ChemistrySelect, vol. 9, no. 36, p. e202401746, 2024.
[80] N. J. Maiti and S. Ganguly, "Some new benzotriazole derivatives: Synthesis, antimycobacterial evaluation, antimicrobial efficacy, ADME studies, and molecular docking studies," Indian Journal of Heterocyclic Chemistry, vol. 33, no. 3, pp. 385–392, 2023.
[81] N. J. Maiti, S. Ganguly, B. Sarkar, and R. Saha, "New benzotriazole derivatives: Synthesis, biological assessment, in vivo oral toxicity analysis, docking studies, molecular dynamics, and ADME profiling," Indian Journal of Heterocyclic Chemistry, vol. 33, no. 4, pp. 489–497, 2023.
[82] N. J. Maiti, "A comprehensive review on analytical techniques for the quantification of pharmaceutical compounds in biological matrices," Journal of Cardiovascular Research, vol. 15, no. 9, 2024.
[83] N. J. Maiti and S. Ganguly, "In silico studies of some novel benzotriazole derivatives against the NNIBP of HIV-1 RT," Journal of Pharmaceutical Chemistry, vol. 8, 2022.
[84] N. J. Maiti, Al Rashid, Md Harun, and A. Banerjee, "The queen of herb with potent therapeutic constituent in various disease states: A reappraisal," International Journal of Phytomedicine, vol. 5, no. 2, pp. 125, 2013.
[85] N. J. Maiti, G. N. K. Reddy, V. V. S. R. Prasad, and P. K. Maharana, "Development and validation of a stability indicating UPLC method for determination of moxifloxacin hydrochloride in pharmaceutical formulations," Pharm. Anal. Acta, vol. 2, no. 142, 2011.
[86] N. J. Maiti, B. K. Sahoo, and N. Parwen, "Pharmacological and traditional uses of Paederia foetida Linn: A review," Int. J. Pharm. Eng., vol. 6, no. 4, pp. 839–844, 2018.
[87] D. K. Arora et al., “An in vitro assessment of microleakage of pit and fissure sealants and restorative materials using dye penetration method,” Journal of Pharmacy and Bioallied Sciences, Feb. 2025.
[88] R. Nagar et al., “In vitro analysis of compressive strength of three different aesthetic restorative materials,” Journal of Pharmacy and Bioallied Sciences, Feb. 2025.
[89] N. Maiti et al., “Assessment of the efficacy of photobiomodulation (PBM) therapy in periodontal treatment: a longitudinal study,” Journal of Pharmacy and Bioallied Sciences, vol. 16, no. Suppl 3, pp. S2449–S2451, Jul. 2024.
[90] D. Sumathi and P. Poongodi, "Scheduling Based on Hybrid Particle Swarm Optimization with Cuckoo Search Algorithm in Cloud Environment," IIOAB Journal, vol. 7, no. 9, pp. 358-366, 2016.
[91] D. Sumathi and P. Poongodi, "Secure medical information processing in cloud: Trust with swarm based scheduling," Journal of Medical Imaging and Health Informatics, vol. 6, no. 7, pp. 1636-1640, 2016.
[92] D. Sumathi and P. Poongodi, "An improved scheduling strategy in cloud using trust based mechanism," Int. J. Comput. Electr. Autom. Control Inf. Eng, vol. 9, no. 2, pp. 637-641, 2015.
[93] D. Sumathi, B. Melinamath, and R. Goyal, "Iov Traffic Prediction Utilizing Bidirectional Memory and Spatiotemporal Constraints with Local Search and NonLinear Analysis," Journal of Computational Analysis & Applications, vol. 33, no. 2, 2024.
[94] D. Sumathi, A. Singh, A. Sinha, D. Aditya, and M. R. KF, "The Deepfake Dilemma: Enhancing Deepfake Detection with Vision Transformers," in 2025 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics, Jan. 2025, pp. 1-7.
[95] V. B. Gowda, M. T. Gopalakrishna, J. Megha, and S. Mohankumar, “Foreground segmentation network using transposed convolutional neural networks and up sampling for multiscale feature encoding,” Neural Netw., vol. 170, pp. 167–175, 2024.
[96] V. B. Gowda, G. M. Thimmaiah, M. Jaishankar, and C. Y. Lokkondra, “Background-foreground segmentation using Multi-scale Attention Net (MA-Net): A deep learning approach,” Rev. Intell. Artif., vol. 37, no. 3, pp. 557–565, 2023.
[97] V. B. Gowda, M. G. Krishna, and J. Megha, “Dynamic Background Modeling and Foreground Detection using Orthogonal Projection onto the Subspace of Moving Objects,”

in Proc. IC3, 2023, pp. 171–176.
[98] V. B. Gowda, M. T. Gopalakrishna, J. Megha, and S. Mohankumar, “Background initialization in video data using singular value decomposition and robust principal component analysis,” Int. J. Comput. Appl., vol. 45, no. 9, pp. 600–609, 2023.