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FARMASITE: A Web Application Portal Designed for Farmers

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Abstract: ***The emergence of e-commerce has fundamentally altered how we purchase and sell items, having a big global impact on firms and consumers. Growing interest in using e-commerce to boost agriculture and improve farmer connections with customers has been observed in recent years. The purpose of this study is to investigate the possibilities of e-commerce in agriculture, particularly as it relates to smallholder farmers in developing nations. This study tries to identify the major advantages, difficulties, and success factors related to the adoption of e-commerce in agriculture by reading the literature and examining case studies. The results of this study should add to the expanding body of information about the use of e-commerce in agriculture and offer guidance to scholars, practitioners, and policymakers. Farmasite is an online resource created with farmers and potential customers in mind. On this website, farmers may post pictures of their produce, including fruits and vegetables, and agricultural products (paddy, maize), to their individual profiles. This makes it simple for potential customers to peruse the items on offer and make purchases for them. Connecting farmers with potential clients and extending the scope of their enterprises are the main goals of Farmasite. The website helps to reduce labour expenses and raise farmer revenues by removing the need for middlemen. Additionally, it makes it possible for buyers to buy fresh, locally sourced goods at affordable costs, benefiting both farmers and shoppers times. Farmers can easily maintain their profiles and submit their products thanks to the platform's user-friendly layout. Buyers may use the site to look for certain items, place orders, and send money. Farmasite offers a smooth experience for both farmers and customers with the aid of cutting-edge technologies like geographically specific search and order monitoring. Farmasite encourages the direct delivery of fresh, regional food products from farmers to end-users in addition to its main goal. This is consistent with the rising tendency among consumers to seek sustainable and healthful food alternatives. Farmasite guarantees that consumers obtain high-quality goods that are devoid of dangerous additions by giving them a source of fresh, unpolished products with enhanced primary quality.***
Keywords: E-Commerce, Farming, Technology in Agriculture, Direct-to-consumer agriculture, MERN Stack.

I. INTRODUCTION

The utilisation of contemporary technology is causing the agriculture industry to evolve quickly. The worldwide e-commerce industry for agricultural products is anticipated to grow at a CAGR of 12.5% from 2021 to 2026 and reach $26.6 billion, according to Research And Markets. This demonstrates the value of e-commerce in the agricultural industry and the potential influence that websites like Farmasite may have. Farmers struggle to sell their goods due to a lack of markets and difficulties negotiating reasonable pricing, among other issues. However, the usage of e-commerce enables farmers to communicate directly with customers, doing away with the need for middlemen and increasing their clientele. Small-scale farmers who might lack the finances to open a real storefront can especially benefit from this. Additionally, customers are becoming more interested in food that is grown responsibly and locally. By linking farmers with consumers and supporting sustainable agricultural practices, Farmasite may help regional economies. This is consistent with the rising trend of ethical and environmentally friendly food consumption.

A dynamic website called Farmasite makes it simple for farmers and customers to communicate. By allowing farmers to publish images and pricing of their goods and allowing buyers to explore and make purchases directly on the website, the platform provides a quick and dependable way for customers to buy high-quality agricultural products. Farmasite is an innovation in the agriculture industry thanks to its user-friendly design and emphasis on offering fresh, unprocessed products. Farmasite may have an effect that goes beyond the agricultural industry and has positive social effects. Farmasite is utilising technology to link farmers and customers and build an environmentally friendly and equitable food system by supporting sustainable agricultural practices, fostering local economies, and giving consumers access to healthful, locally produced food alternatives.

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II. RELATED WORK

1) *Community-Supported Agriculture (CSA):* A group of farmers and consumers originally established CSA in the United States in the 1980s with the goal of fostering a closer and more fruitful relationship between producers and customers. It first appeared in New England and has since expanded not just to other nations but also to other parts of the United States. In the 1970s, Switzerland launched the first CSA programme in Europe, and the idea has since expanded across the whole continent.
2) *Farmers' Markets:* There is historical evidence of farmers' markets from the time of ancient Greece and Rome. Farmers' markets expanded in popularity in the United States in the 19th century as a means for rural producers to sell their products directly to urban consumers. Farmers' markets, which provide a range of fresh and locally produced goods, may now be found in cities and towns all over the world.
3) *Online Markets:* As e-commerce has expanded and consumer demand for sustainably and ethically sourced food has grown, online markets for fresh, locally sourced items have lately appeared. In 2009, Farmigo, a platform that links customers with nearby farmers, was established in New York City. In the UK, a comparable site called FarmDrop was established in 2012. Another online marketplace for regional foods, Good Eggs, was established in San Francisco in 2011.
4) *Farm-to-table Restaurants:* As a subset of the greater counterculture movement in the United States, the farm-to-table movement had its start in the 1960s and 1970s. Originally connected to vegetarianism and organic food, it now emphasises supporting regional, sustainable agriculture. As chefs and restaurateurs started to stress the value of utilising fresh, locally produced ingredients in their menus in the 1980s and 1990s, the trend gathered steam. Farm-to-table restaurants may now be found in cities and towns all over the world. The trend has also sparked comparable projects in other sectors of the food business, such as hospital meal service and school lunch programmes.

III. LITERATURE SURVEY

In the agricultural industry, e-commerce and mobile commerce have grown in popularity. In this study, the literature on e-commerce and mobile commerce in agribusiness is thoroughly reviewed. According to the survey, agribusiness has greatly boosted its usage of e-commerce and mobile commerce in recent years. Farmers are selling their goods directly to customers using e-commerce and mobile commerce platforms, which has increased their revenues and decreased their reliance on middlemen. The survey also found a number of obstacles to implementing e-commerce and mobile commerce in the agribusiness, including limited technical skills, weak infrastructure, and a lack of customer and farmer trust. For farmers to overcome these obstacles, the authors advise that both the public and private sectors should make investments in infrastructure development. In order to support sustainable agriculture and raise farmers' incomes, the study concludes that e-commerce and mobile commerce should be used in the agricultural sector[1]

The research "Agriculture E-Commerce for Increasing Revenue of Farmers Using Cloud and Web Technologies" looks into how e-commerce may help farmers in India earn more money. The study, which looked at several cloud and web technologies that may be applied to farm e-commerce, was carried out in Chennai. The researchers contend that by giving farmers a direct line to customers, cutting down the middlemen's fees, and expanding their market, e-commerce can help farmers boost their income. The report also emphasises how online and cloud technologies, like blockchain and machine learning, have the potential to improve the effectiveness and security of farm e-commerce. The authors draw the conclusion that agriculture e-commerce has the potential to revolutionise the Indian agricultural industry and enhance farmers' quality of life. However, they also point out that substantial infrastructural and training investments are needed before farmers can utilise e-commerce. In general, the study sheds light on the potential of e-commerce in the agriculture industry and offers suggestions for effective adoption methods[2].

The study covered in the referenced source seeks to establish a digital platform for the agriculture industry that connects farmers, retailers/markets, the government, and end-users. Due to season restrictions, a lack of time to research market conditions, and restricted access to customers, Indian farmers have several difficulties in realising adequate returns on their investments. In order to provide numerous possibilities for the examination of the present market scenario, the research suggests a new marketing strategy that enables farmers to sell their goods at every stage of the marketing chain, including marketplaces, merchants, and directly to end users.The suggested platform combines a common database system that makes it easy to store data with a mobile-based Android application for farmers, users, and merchant access and a web-based Java application for government access. The Have rsine method is utilised for latitude and longitude checks using the GPS system to sell or buy crops, and the KNN technique is employed as a closest neighbour search for improved decision-making. The platform also gives the government the ability to handle complaints that have been filed and create laws and restrictions, such as a minimum price for a certain quality of crop or product. The system has trouble tracking records of transportation in real time.

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In conclusion, the suggested digital platform offers transparency to the sale of agricultural goods by giving farmers a variety of alternatives for selling their goods and permitting government action to address any problems. The platform analyses the state of the market and employs algorithms to guarantee fair prices for the farmers. However, the system has trouble dynamically tracking transportation data, necessitating more study and improvement[3].

The survey was carried out in Trichy District, Tamil Nadu, India, to see how widely farmers were utilising e-commerce. The study sought to analyse the current e-commerce adoption trend and pinpoint the elements influencing farmers' e-commerce adoption. For the study, 150 farmers were chosen as a sample, and information was gathered through a questionnaire-based survey. The survey found that farmers in the Trichy area had a low degree of e-commerce practice adoption. The lack of e-commerce knowledge, restricted access to technology, and low levels of education were identified to be the main causes of the low adoption rate. The study also discovered a favourable correlation between farmers' income and level of education and their adoption of e-commerce practises. The study's findings support the necessity for expanded training programmes and awareness campaigns aimed at educating farmers about the practises of e-commerce. The government and other organisations may play a significant role in helping farmers embrace e-commerce practices by giving them access to technology and training programmes. According to the study, e-commerce adoption may considerably increase farmers' income and standard of living, thus it is important to promote and support its use[4].

IV. PROPOSED SYSTEM

The suggested method is an online platform called Farmasite that seeks to establish direct contact between farmers and consumers. Farmers will be able to promote their goods and prices on the platform on an online market where buyers can explore and make purchases straight from the farmers. The primary goals of Farmasite are to assist local farmers, advance sustainable agricultural methods, and provide consumers alternatives to processed foods that are fresh.

Farmers may register and post pictures of their products along with pertinent details like price, weight, and quantity accessible on Farmasite thanks to its user-friendly design. On the other side, customers will be able to use the site to browse and buy things depending on their tastes and location. Several payment methods, including credit cards, debit cards, and electronic wallets, will be available on the site. Farmers and customers will both profit from Farmasite in a number of ways. Farmers will be able to raise their revenue, decrease their reliance on middlemen, and grow their client base. As businesses won't have to deal with middlemen who could take a significant chunk of their income, they will also be able to offer their goods at reasonable prices. On the other hand, customers will have access to a broader selection of wholesome, regionally produced fresh food options that are better for the environment. Additionally, Farmasite will have a rating and review system that will let users score and comment on the goods they buy. Other consumers will benefit from this when choosing items from the platform since they will be more informed. Customers will also be able to communicate with farmers through Farmasite and find out more information about the items they buy, including where they came from and the agricultural methods employed.

To safeguard the security and privacy of both farmers and consumers, Farmasite is being constructed utilising the most up-to-date technology and will be housed on a secure server. Additionally, the platform will be mobile device-optimized, allowing users to access it while on the go.

In conclusion, Farmasite is an online platform that seeks to link farmers and customers one-on-one. The platform will provide a number of advantages, including the support of regional farmers, the promotion of sustainable agricultural practises, and the availability of fresh, unprocessed food options. The platform will be constructed with cutting-edge technology and will be mobile-friendly. Farmasite will contribute to the development of a more just and sustainable food system by offering a dependable and practical means for farmers and consumers to interact.

V. METHODOLOGY

The methods used to plan, create, and put the Farmasite project into action is described in depth in this section. The initiative is the creation of a website for farmers where they can post images of their goods and buyers can browse them and place delivery orders.

1) *Overview:* A combination of MongoDB, Express.js, React, and Node.js technologies were used in the development of the MERN stack project. The project comprises a client-side application and a server-side API that use the Model-View-Controller (MVC) architectural paradigm**.**
2) *Technology Stack:* The user and product data were stored in the MongoDB database. The server-side API that connects to the MongoDB database was created using Express.js. The client-side application was created using React, and the server-side code was executed using Node.js.

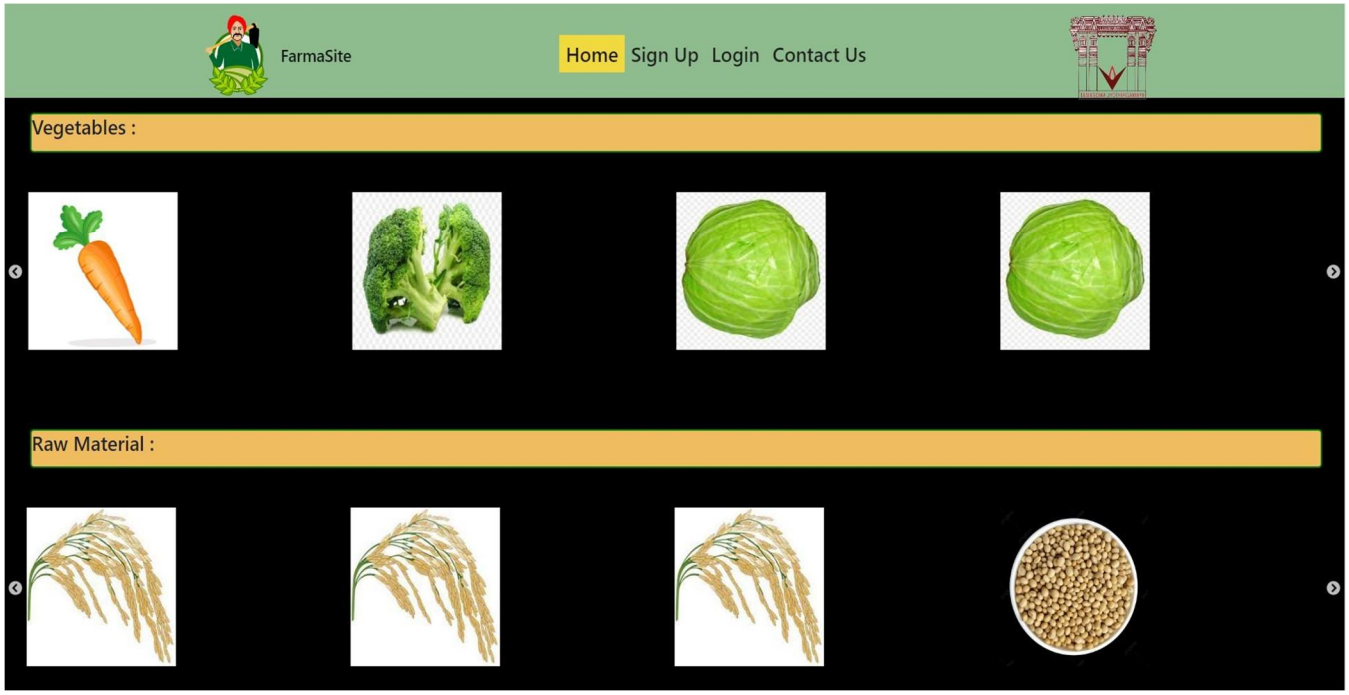
3) *Design:* Using Figma, wireframes and mockups were produced during the design phase. With an emphasis on the user experience, the user interface was created to be simple to use and intuitive. Stakeholders examined the design, and it was updated in response to their comments**.**
4) *Development:* The development team and stakeholders frequently collaborated throughout the agile methodology-based process. React was used to build the front end while Express.js and Node.js were used to build the back end. The project adhered to industry standards for documentation and code organization. To guarantee the stability and quality of the code, continuous integration and deployment were employed.
5) *Testing:* Both automated and manual testing were used in the testing procedure. The frontend application was tested using functional and integration tests, while the backend API was tested using unit tests. In order to make sure the project complied with user requirements, manual testing was also done.
6) *Challenges:* Managing data consistency between the frontend and backend was one of the project's biggest issues. Redux, a state management library, was used to manage the application state in order to overcome this problem.

In conclusion, the MongoDB, Express.js, React, and Node.js technologies were used to create the Farmasite project. The development team and stakeholders worked together on the project while adhering to an agile methodology. To guarantee code quality and stability, continuous integration and deployment were employed. The project was successfully deployed to a live environment.

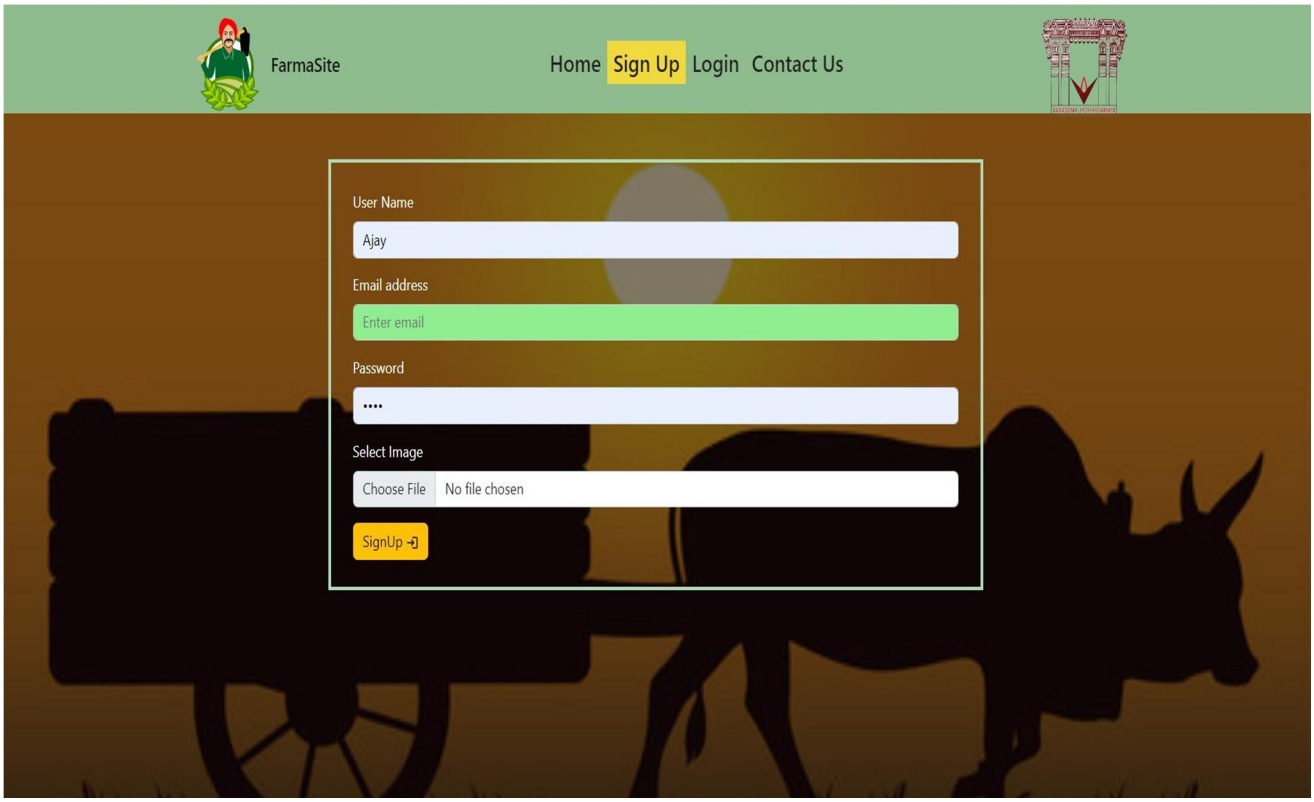
VI. OUTPUT

A. *Home Page*

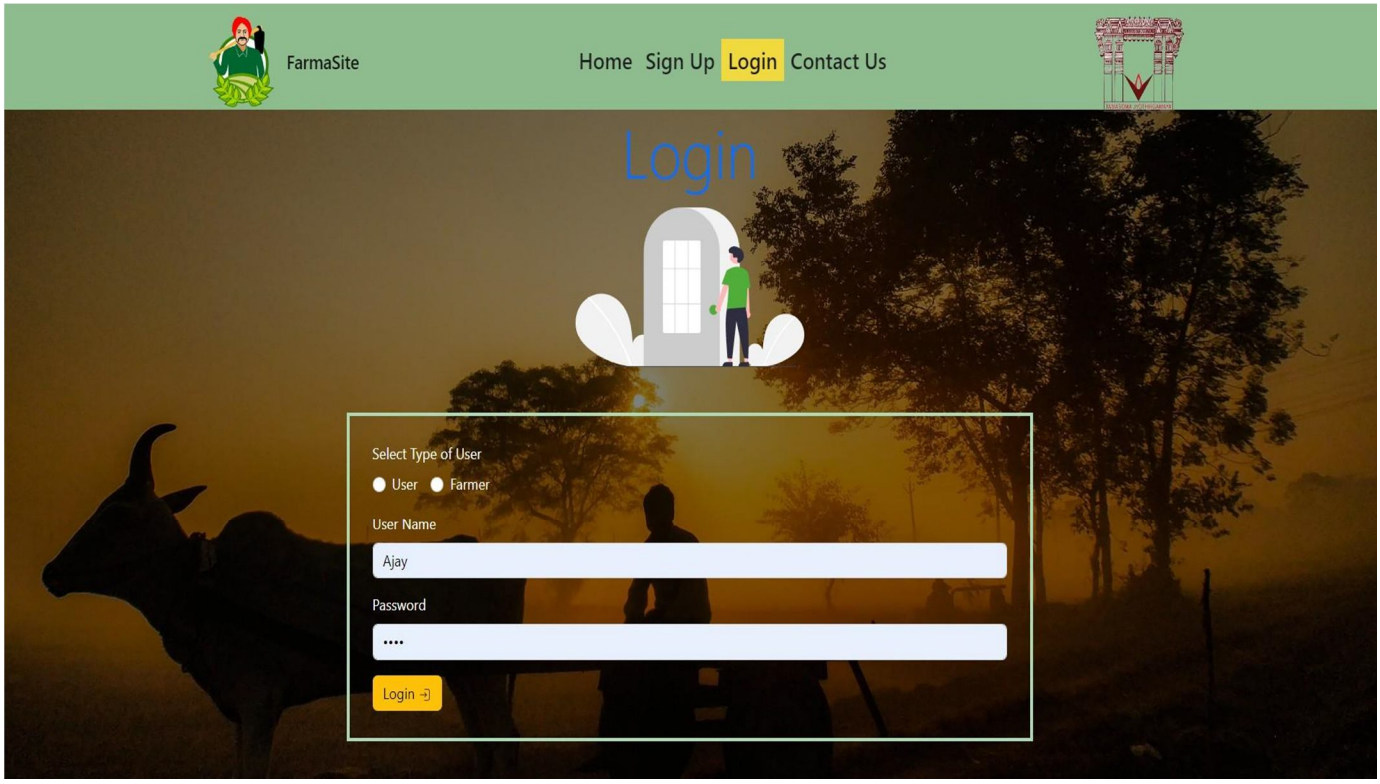
B. Home Page-II



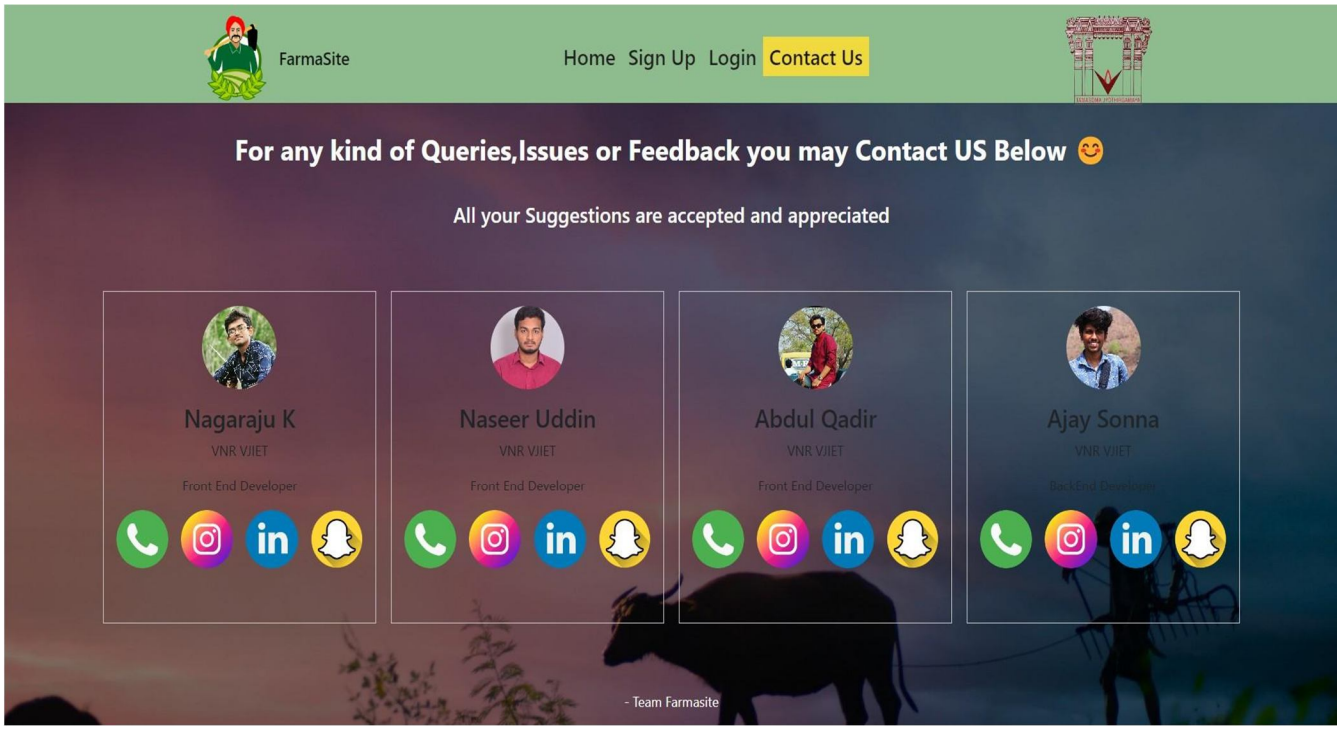
C. Sign-UP Page



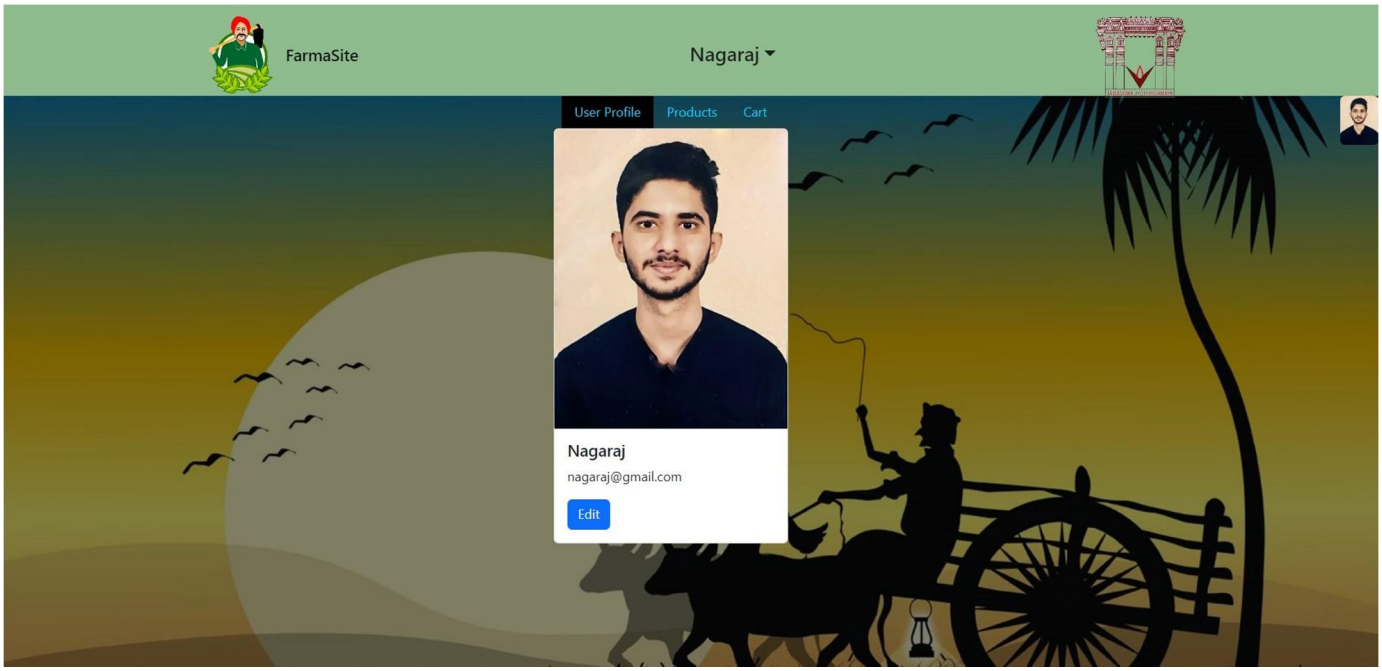
D. Login Page



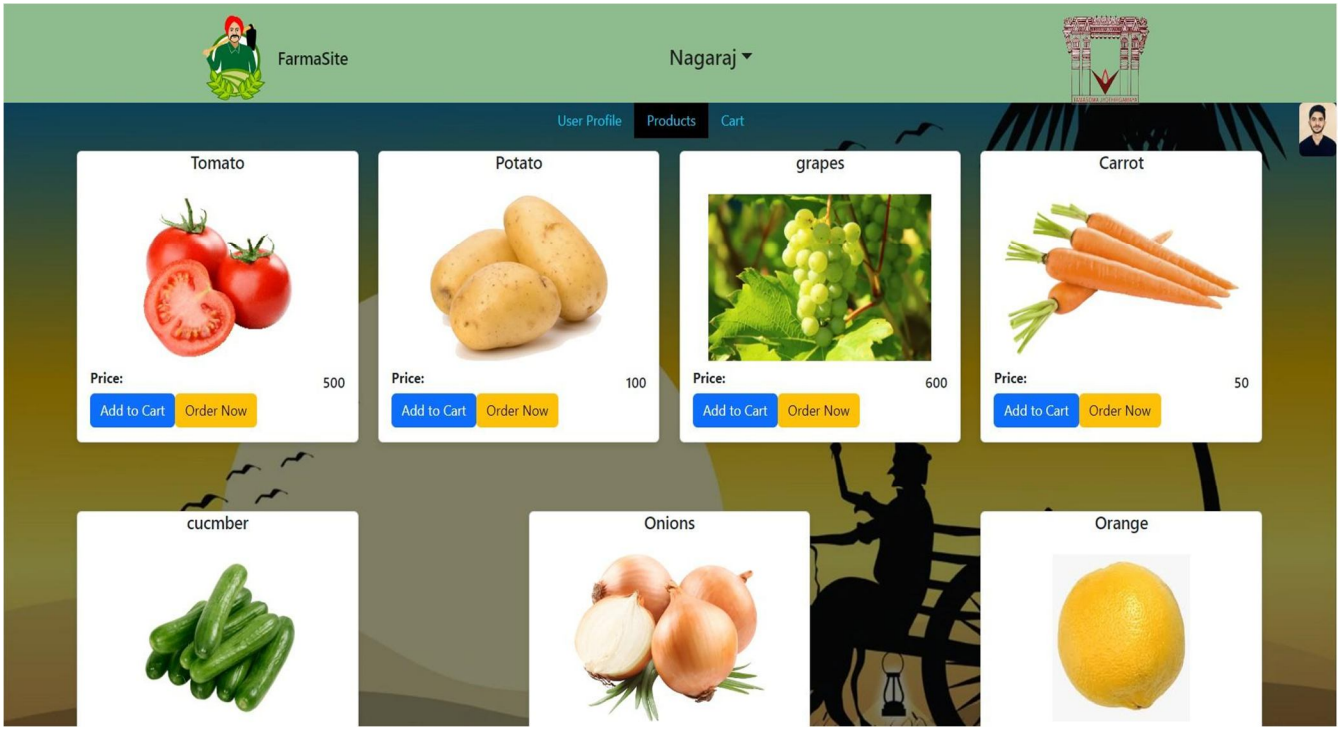
E. Contact Page



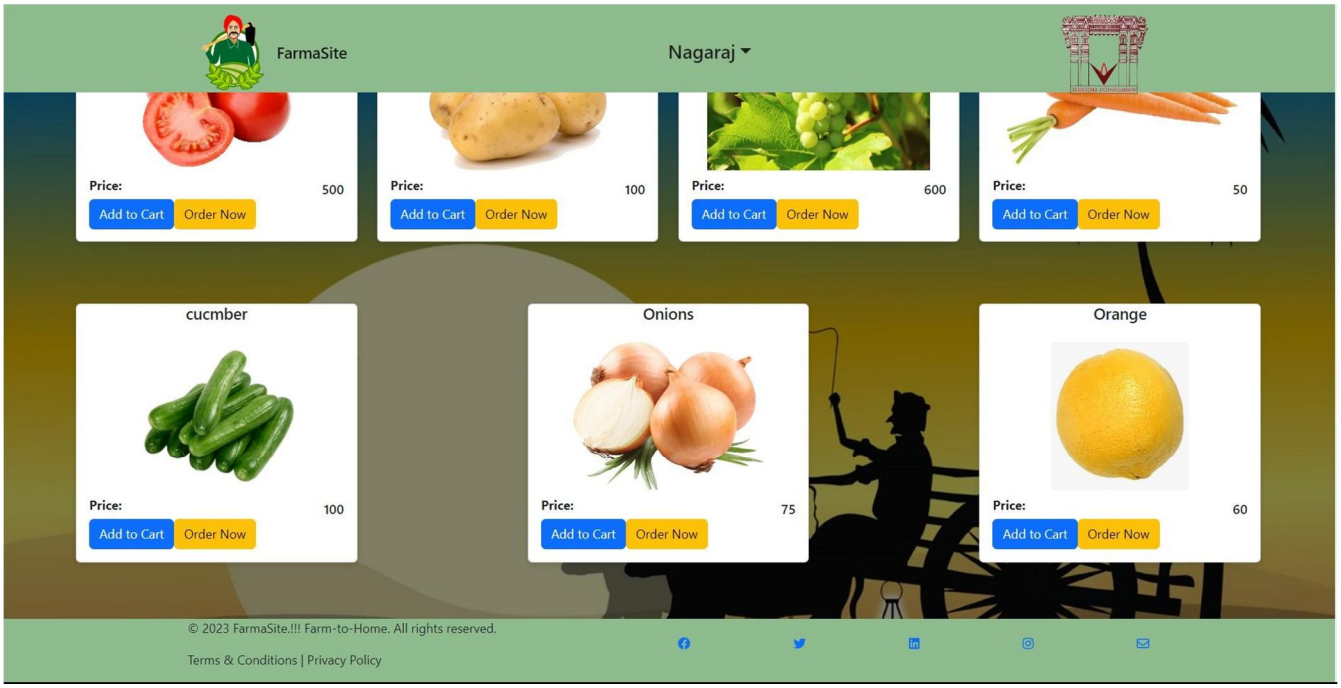
F. Consumer Profile Page



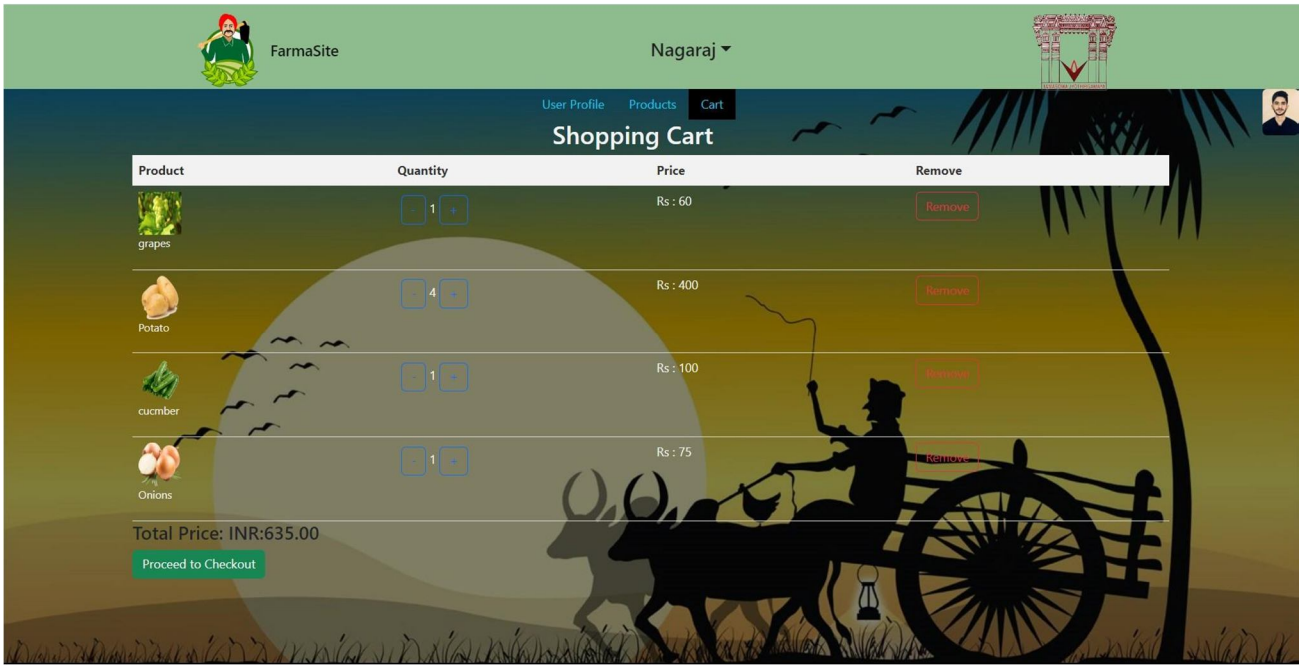
G. Products-Page



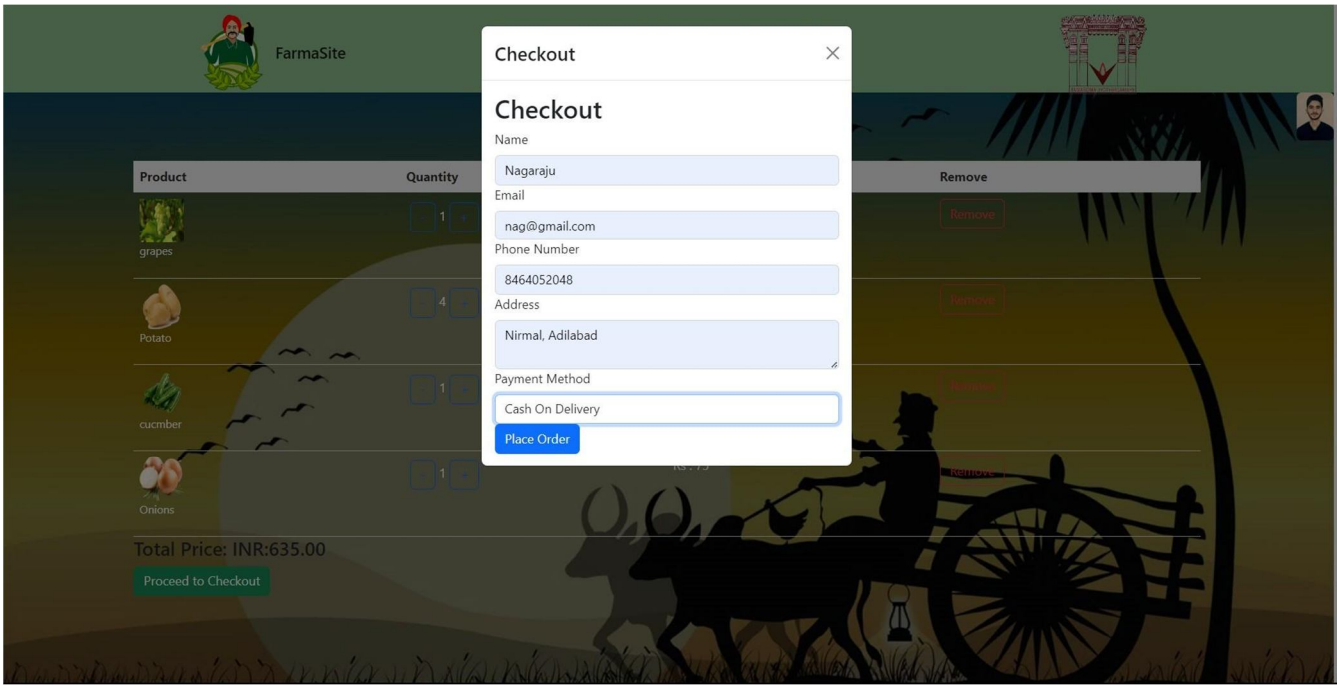
H. Products Page



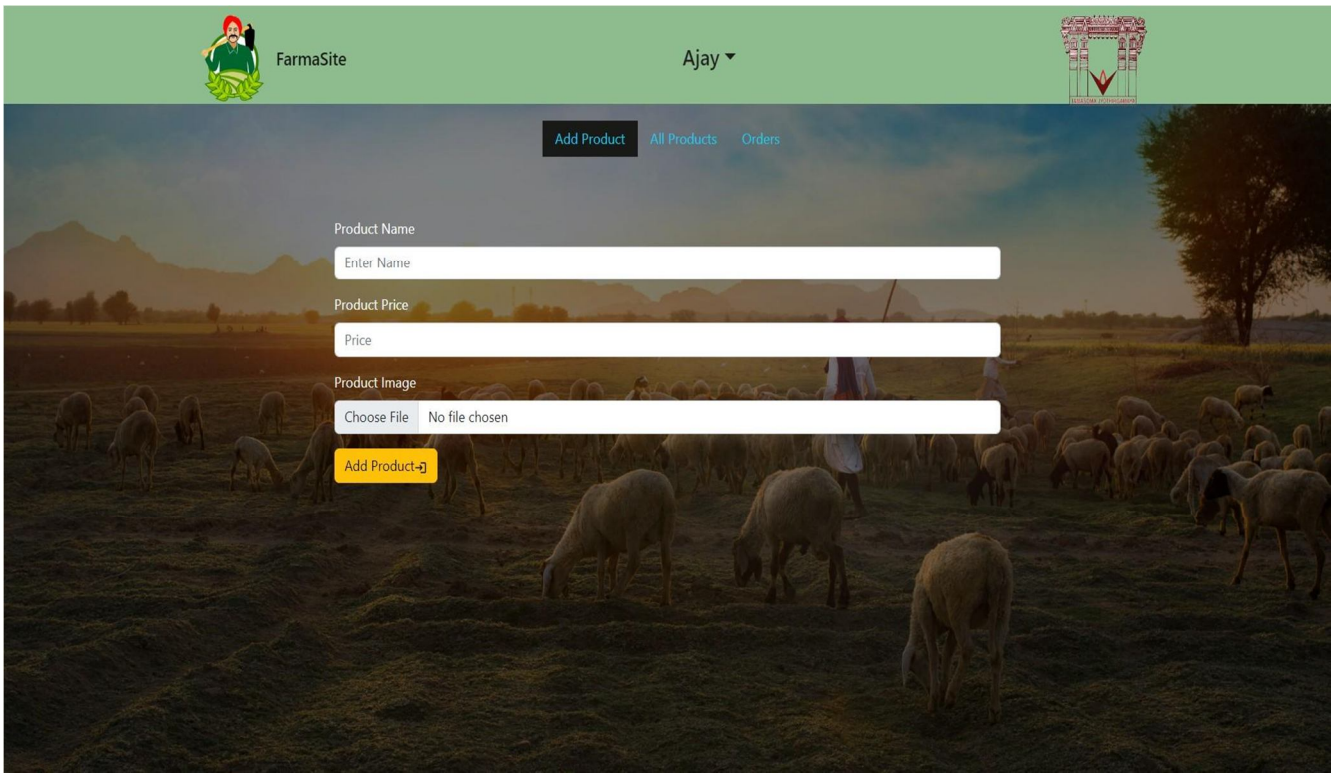
I. Cart Page



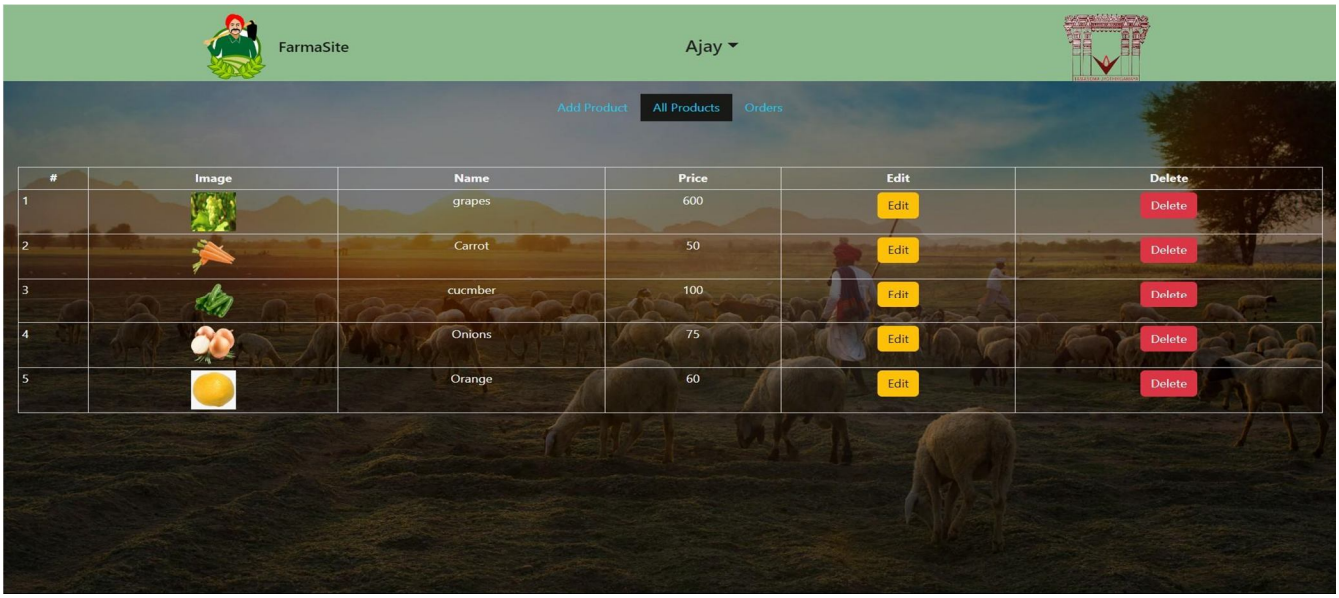
J. Checkout Page



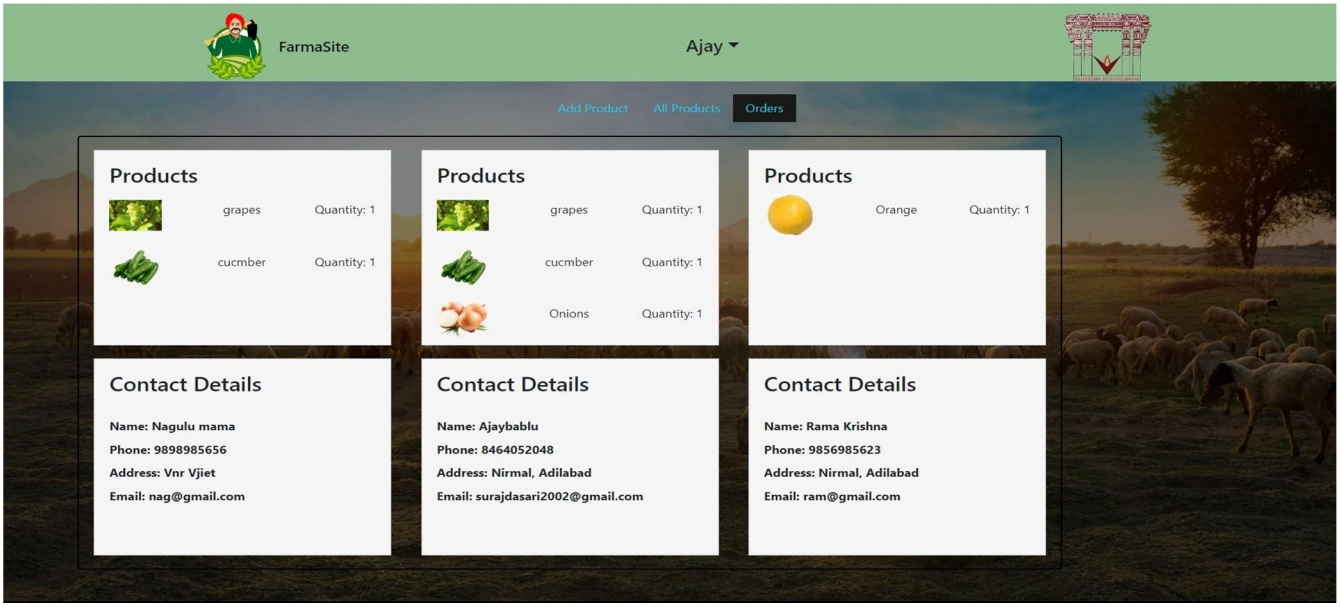
K. Farmer Page



L. All Products Page



M. Orders Page



VII. CONCLUSION

Finally, it can be said that the Farmasite platform has the potential to revolutionise the agricultural sector and advance sustainable farming methods. Farmasite can do away with the need for middlemen by linking small-scale farmers and consumers directly through an approachable website, enabling them to reach a broader audience. Additionally, the platform may help regional, organic farming practices and environmental sustainability by lowering transportation emissions.

Customers can gain from Farmasite by having access to fresh, regionally produced, and unprocessed agricultural goods. Farmasite can be a desirable substitute for the mass-produced and processed goods found in supermarkets in today's world when people are becoming more concerned about the quality and origin of their food.

Overall, the proposed project has the potential to be advantageous for the environment, society, and the agricultural business. Farmasite has the potential to revolutionise the food sector by encouraging sustainable farming practices, boosting regional economies, and giving consumers access to excellent in quality agricultural goods.

VIII. ACKNOWLEDGEMENT

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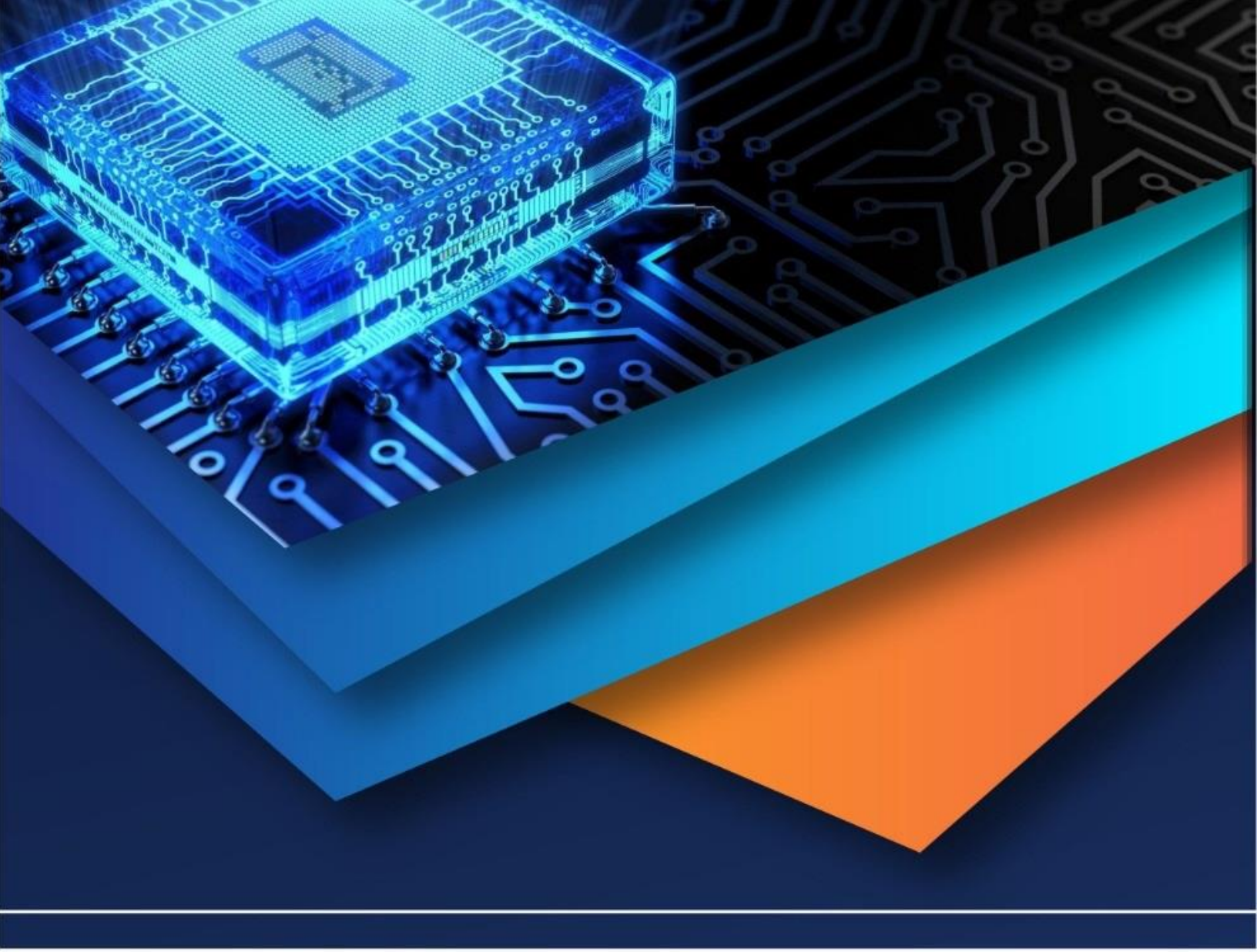

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