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AKSHAYA

COLLEGE OF ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE TECHNICAL MAGAZINE

ACADEMIC YEAR 2024-2025 EVEN SEMESTER

Issue 2 [MAY 2025]



Message from the Head of Department

The Department of Artificial Intelligence and Data Science, established in 2022 at Akshaya College of Engineering and Technology, offers a four-year B.Tech. Degree program with an intake of 60 students. The department is striving towards the goal of providing innovative and quality education to the students to achieve academic excellence. The department is committed to equip students with the necessary knowledge and skills to excel in the rapidly evolving fields of Artificial Intelligence and Data Science, empowering them to become future leaders and innovators in the industry. The motto of the department is to provide quality technical education to make the students industry-ready. Our goal is to ensure that our engineering graduates are well prepared to play the roles of problem solvers, project leaders, entrepreneurs, and above all ethical citizens of a global society.



**Dr. R. Mekala,
Professor &
Head**

Vision and Mission of the department

Vision of the Department

To foster industry cooperation and impart cognitive learning in order to develop professionals who can adapt to the shifting demands of new trends in Artificial Intelligence and Data Science

Mission of the Department

DM 1 : To provide an Excellent infrastructure that keeps up with modern trends and technologies for students and educators.

DM 2 : To impart knowledge in cutting edge technology for Artificial Intelligence and Data Science with industrial standards.

DM 3 : To impart high-quality education embedded with moral and ethical principles.

DM 4 : To encourage lifelong learning and research that benefit society as a whole.

Program Educational Objectives (PEOs)

PEO 1 : Apply the knowledge of basic sciences, mathematics, Artificial Intelligence, data science and statistics to build a system that requires analysis of huge volumes of data.

PEO 2 : Product Development: Design a model using Artificial Intelligence to solve critical problems in the real world.

PEO 3 : Higher Studies: To enable the students to think logically and pursue life-long learning and collaborate with an ethical attitude in a multidisciplinary team.

Program Specific Outcomes (PSOs)

PSO 1 : Create, select and apply the knowledge of AI and Data Science to solve societal problems.

PSO 2: Develop data analytics and data visualization skills, skills pertaining to knowledge acquisition, knowledge representation and knowledge engineering, and hence be capable of coordinating complex projects.

Program Outcomes (POs)

PO 1 : Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2 : Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3 : Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations

PO 4 : Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5 : Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6 : The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7 : Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8 : Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9 : Individual and Team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10 : Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11 : Project management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12 : Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Message From Editorial Team

Chief Editor:

Dr.R.Mekala, Professor & HoD-AI&DS

The department of Artificial Intelligence and Data Science is striving towards the goal of providing innovative and quality education to the students to achieve academic excellence.

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Our goal is to ensure that our engineering graduates are well prepared to play the roles of problem solvers, project leaders, entrepreneurs, and above all ethical citizens of a global society.

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Table of Contents

S.NO	Topics	Page No
1	VIBEMIRROR: PERSONALITY PREDICTION FROM MUSIC PLAYLISTS	7
2	REAL – TIME ANATOMY	8
3	SMART FILE ORGANIZER	10
4	CHATBOT USING AI	11
5	NEXT GEN BIOMEDICAL MONITORING: GSM INTEGRATED EMBEDDED SYSTEM FOR PATIENT CARE	13
6	FITMATE – AI HEALTH & FITNESS	15
7	WOMEN SAFETY APPLICATION	16
8	DRIVE BUDDY - YOUR TRUSTED SERVICE PARTNER	17
9	ALTITUDE METER	18
10	RIDER	19



VIBEMIRROR: PERSONALITY PREDICTION FROM MUSIC PLAYLISTS

VibeMirror: Personality Prediction from Music Playlists is an innovative project that explores the deep connection between musical preferences and human personality. Grounded in psychological theory and powered by artificial intelligence, VibeMirror uses the Big Five Personality Traits model—Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (OCEAN)—as the foundation for profiling individuals based on their music taste.

The system accepts user playlists or song inputs and extracts key audio and metadata features such as tempo, key, valence, energy, danceability, genre, and lyrical sentiment using APIs like Spotify and audio analysis tools. These features are then processed through a machine learning pipeline trained on existing psychological and musical datasets to predict the user’s personality traits with reasonable accuracy.

The core objective of VibeMirror is to provide users with a mirror-like reflection of their inner traits through the lens of their musical choices. In addition to offering an engaging self-discovery experience, the project has potential applications in personalized content delivery, mental health monitoring, online dating, marketing personalization, and educational tools.

This project highlights how data science and psychology can work together to provide deeper insights into human behaviour. By merging technical innovation with emotional intelligence, VibeMirror aims to bridge the gap between what we listen to and who we are.

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REAL – TIME ANATOMY

Augmented Reality (AR) has emerged as a transformative force in education, particularly in the domain of human anatomy and biology. Traditional teaching methods have often fallen short in conveying the complicated parts of anatomical structures, leading to passive and abstract learning experiences. AR's integration into education has revolutionized this paradigm, offering three-dimensional, interactive, adaptable, and accessible learning experiences. It allows students to immerse themselves in lifelike anatomical models, encouraging deeper engagement and understanding. This technology enables real-time assessment and personalized learning, breaking down the barriers between theory and practice. Moreover, AR's

accessibility and portability make learning possible anywhere and anytime, reducing the confines of the traditional classroom. One of the most significant importance of AR in education is its capacity for real-time assessment and feedback.

With traditional methods, understanding anatomical structures was often a solitary hard work, with limited opportunities for immediate correction and guidance. In contrast, AR applications can provide instant feedback on a student's actions, enabling educators to identify areas of difficulty and involve one promptly. This feature not only enhances the learning process but also reduces the frustration often associated with the complexities of human anatomy.

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SMART FILE ORGANIZER

Smart File Organizer Pro is a lightweight, cross-platform application that automates the process of organizing digital files. In today's digital age, users frequently struggle with cluttered folders caused by large volumes of downloads, documents, and media files. Manual sorting is time-consuming and prone to errors.

This tool simplifies file management by automatically categorizing files into predefined folders such as *Documents*, *Images*, *Videos*, *Music*, *Archives*, and *Others*. It also offers features for:

- Identifying and deleting duplicate files using file hash comparisons.
- Finding and cleaning unused files based on the last modified date.
- Undoing previous sort operations to recover file locations.
- Auto-sorting files via drag & drop interaction.

Originally developed using **Python** and **Tkinter** for Windows, the project is now being rebuilt with **Kivy** and **KivyMD** to support both Windows and Android platforms. This ensures that users can enjoy file organization on both desktops and mobile devices.

Technologies used include **Python, Kivy, KivyMD, Plyer**, and standard Python libraries (**os, shutil, hashlib, send2trash**).

By automating repetitive organization tasks, *Smart File Organizer Pro* improves digital hygiene, saves user time, and enhances productivity. The project is open-source and available on GitHub for future development and community contributions.

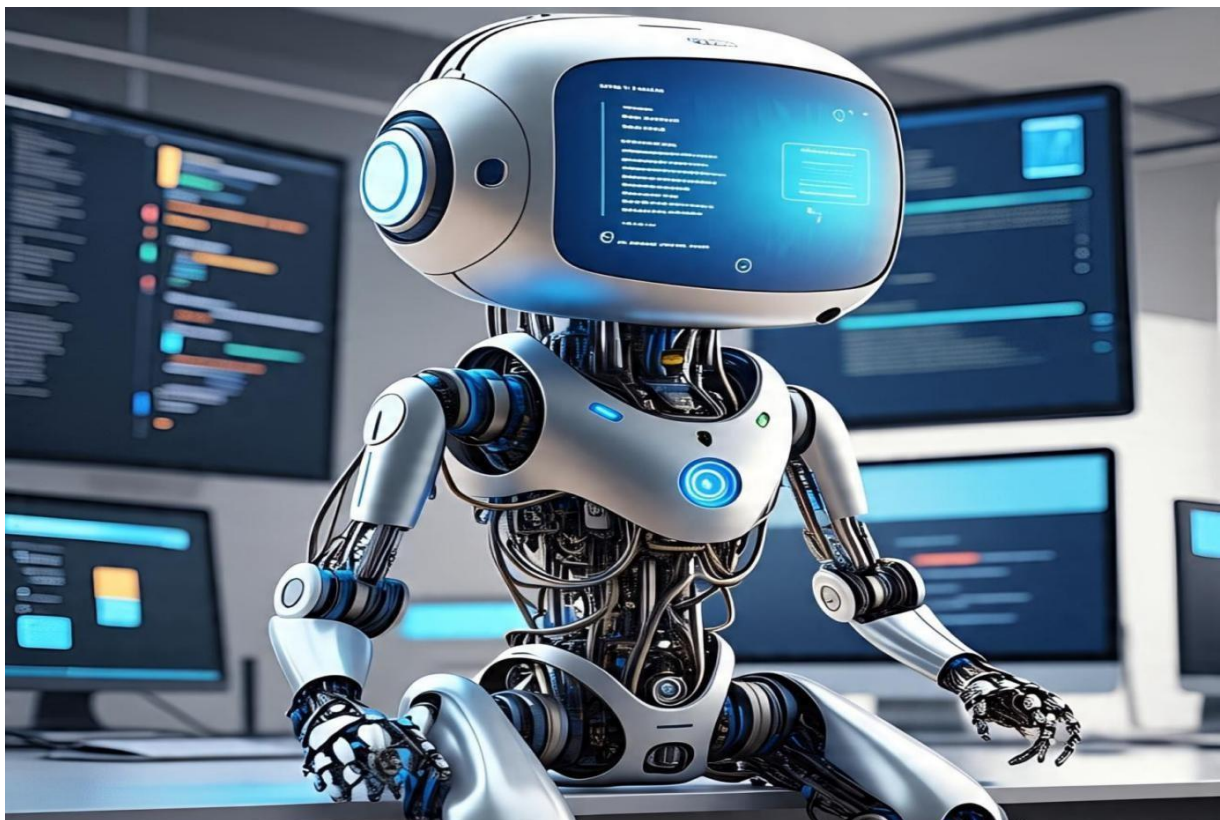
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CHATBOT USING AI

Chatbots, conversational agents powered by artificial intelligence, have evolved significantly from rudimentary rule-based systems to sophisticated conversational interfaces. This abstract provides a comprehensive overview of chatbot technology, examining its historical progression, core architectural components, diverse applications, contemporary trends, persistent challenges, and prospective future developments. Historically,

early chatbots relied on predefined rules and keyword matching, limiting their ability to handle complex or nuanced interactions. The advent of Natural Language Processing (NLP), Machine Learning (ML), and more recently, Deep Learning (DL), particularly Generative AI and Large Language Models (LLMs), has revolutionized the field. Modern chatbots now incorporate advanced Natural Language Understanding (NLU) to accurately interpret user intent, even in the presence of slang, typos, or complex sentence structures. Natural Language Generation (NLG) capabilities enable them to produce coherent, contextually relevant, and increasingly human-like responses. Integration with backend systems and databases is crucial for accessing and updating information, enabling transactional capabilities beyond simple FAQs.

Current trends in chatbot development emphasize hyper-personalization, where chatbots leverage user data and past interactions to deliver tailored recommendations and experiences. Emotional intelligence is an emerging area, with chatbots being developed to detect and respond to user emotions through sentiment analysis, aiming for more empathetic interactions. Furthermore, the focus is shifting towards proactive customer support, where chatbots anticipate user needs and offer assistance before being explicitly asked. Multilingual capabilities are also critical for global businesses. Despite these advancements, several challenges persist. Context management across multiple turns of conversation or even across different sessions remains a complex problem.

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NEXT GEN BIOMEDICAL MONITORING: GSM INTEGRATED EMBEDDED SYSTEM FOR PATIENT CARE

In today's fast-paced world, access to quality healthcare, especially in remote or rural areas, continues to be a major challenge. Many patients, particularly the elderly and those suffering from chronic illnesses, require constant monitoring of their vital health parameters. However, frequent visits to hospitals or clinics are often impractical, expensive, and stressful for such individuals.

To address this challenge, this project proposes the development of a Next Generation Biomedical Monitoring System that uses embedded technology integrated with GSM (Global System for Mobile Communications) to remotely monitor patients in real time. This system is designed to measure essential health parameters like heart rate, body temperature, and SpO₂ (oxygen saturation), providing an immediate update of the patient's condition to healthcare professionals or family members via SMS alerts.

The embedded system works efficiently with low power consumption, making it suitable for portable and continuous operation. Whenever the system detects abnormal health parameters that may indicate a medical

emergency, it instantly sends out a predefined emergency alert via GSM, allowing timely medical intervention and possibly saving lives.

This project plays a significant role in bridging the gap between patients and healthcare providers, especially in regions where healthcare facilities are either insufficient or inaccessible. It contributes to the broader vision of telemedicine and digital healthcare transformation. To design a portable biomedical embedded system capable of real-time acquisition and monitoring of vital signs, including:

- Heart Rate
- Body Temperature
- SpO₂ (Oxygen Saturation)
- *(Optional Expansion: ECG monitoring for cardiac patients)*

To implement a reliable communication mechanism using a GSM module to send SMS alerts when patient vitals cross normal limits, ensuring timely medical attention. To develop an efficient and power-saving embedded solution that is suitable for home use and capable of operating for extended periods on battery. To reduce dependency on hospital visits for routine monitoring by empowering patients with a self-monitoring device connected to their caregivers. To contribute towards smart healthcare solutions by integrating modern communication technology with biomedical monitoring.

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FITMATE – AI HEALTH & FITNESS

In the modern era of technology-driven lifestyles, maintaining optimal health and fitness has become a growing concern. FitMate – AI Health & Fitness is an intelligent health companion application designed to personalize and enhance user wellness journeys through the integration of artificial intelligence. The platform leverages AI to analyze user data such as physical activity, nutrition, sleep patterns, and biometric inputs to provide customized health plans, work out routines, and diet recommendations. FitMate aims to address the key challenges in fitness adherence by providing real-time feedback, motivation boosters, and smart goal tracking using machine learning algorithms. Features include AI-powered virtual trainers, activity recognition using computer vision, progress analytics, and natural language interaction for ease of use. Additionally, FitMate incorporates predictive modeling to warn users of potential health risks and suggest preventive measures. This application not only empowers individuals to take control of their health but also bridges the gap between technology and personal well-being. With its scalable design, FitMate is suitable for both fitness beginners and professionals, making it a comprehensive solution for anyone seeking an AI-supported lifestyle transformation

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WOMEN SAFETY APPLICATION

Women's safety has become one of the most concerning issues in today's society. With growing incidents of harassment, stalking, and assault, it is essential to create technological solutions that ensure the safety of women in real-time. The proposed "Women Safety App" is a mobile-based application developed with the objective of providing quick assistance and preventive features to women in unsafe situations. This project aims to use the power of mobile technology, GPS tracking, and emergency communication to protect and empower users. The app is equipped with an SOS feature, which sends an instant alert message along with the user's real-time location to pre-registered emergency contacts. This ensures that help can reach the user as quickly as possible. The app also includes live location sharing, so friends or family can track the user's movements when travelling alone or during late hours. A voice-activated trigger is included to ensure that the app can function even when the user cannot physically access the phone. Another core feature is route tracking, which monitors a user's journey and sends alerts if the user goes off the intended path. The app also provides one-tap access to nearby police stations, emergency helpline numbers, and a safe zone alert system, which notifies the user when entering or leaving predefined safe or unsafe areas. The application is designed with a user-friendly interface, making it accessible even to users who are not tech-savvy. All collected data is encrypted to maintain privacy and

confidentiality. The app is compatible with both Android and iOS platforms and can be extended in the future with features like AI-based threat detection, wearable device integration, and community alert systems.

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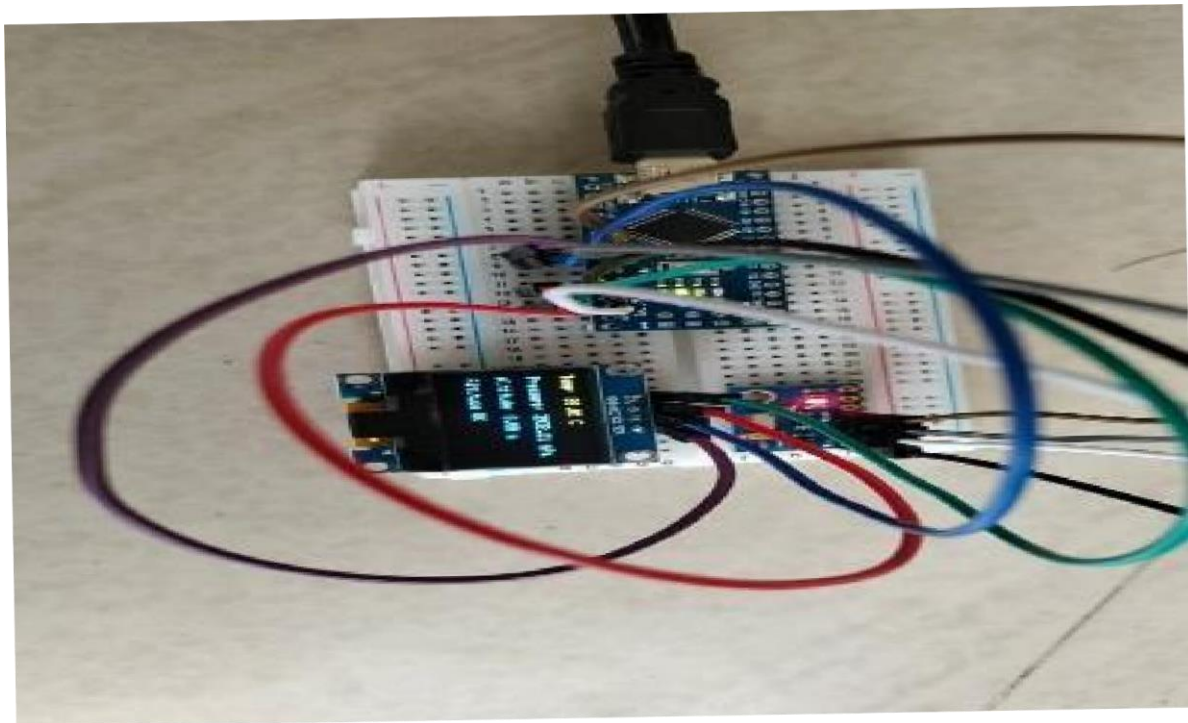


DRIVE BUDDY - YOUR TRUSTED SERVICE PARTNER

In today's fast-paced world, ensuring timely vehicle maintenance and finding reliable service providers is a growing concern. Drive Buddy is a smart vehicle service assistant designed to simplify and enhance the experience of car servicing through intelligent automation and user-friendly features. This platform connects vehicle owners with trusted mechanics and service stations, offering seamless booking, tracking, and support. System Features & Architecture Drive Buddy integrates mobile technology with real-time service tracking. Key features include:- Service Booking Portal - Allows users to book maintenance services easily.- Live Tracking - Track the status and location of your vehicle during servicing.- Verified Partners - Only certified and reviewed mechanics and garages are listed.- Smart

Reminders - Get alerts for scheduled maintenance, insurance renewals, etc. The backend is built using a RESTful API and a secure database to store user and service data. The front end is developed using Flutter for cross-platform compatibility. Impact & Future Scope Drive Buddy aims to build trust and reliability in the automobile service sector. Future developments will include: - Integration with vehicle OBD systems for real-time diagnostics- AI-based predictive service suggestions- Expansion to cover two-wheelers and commercial vehicles

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ALTITUDE METER

An altitude meter, also known as an altimeter, is a device used to measure the altitude or height of an object above a fixed level, typically above sea level. In both aviation and modern embedded systems, altitude measurement plays a crucial role in ensuring safety, navigation accuracy, and system functionality. This project aims to design and develop a digital altitude meter using cost-effective and efficient sensors integrated with a

microcontroller platform. The proposed system uses a barometric pressure sensor such as the BMP180/BMP280 to calculate altitude based on atmospheric pressure changes. Since atmospheric pressure decreases with an increase in height, the sensor readings can be converted into altitude values using mathematical formulas embedded in the firmware. The microcontroller, such as an Arduino or ESP32, reads data from the sensor and processes it in real-time. The altitude data is then displayed on an LCD or OLED screen for user interaction. Additionally, this project can be enhanced by adding GPS modules to compare GPS-based altitude with pressure-based readings, and Bluetooth or Wi-Fi modules for wireless data transmission. This makes the device suitable not just for aviation but also for use in drones, balloons, hiking instruments, and portable meteorological kits.

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RIDER

This project presents a comprehensive full-stack web application designed to streamline appointment scheduling between users and local service providers. Built using **Next.js**, **Tailwind CSS**, and **TypeScript**, the application offers a modern, responsive, and efficient solution for booking services such as salon appointments, home repairs, consultations, and more.

The system empowers **users** to effortlessly search for service providers based on category and geographic location. Each provider profile displays essential details including services offered, availability, and ratings, enabling users to make informed booking decisions. Users can easily schedule or cancel appointments, with real-time updates ensuring a smooth experience.

On the **service provider** side, the platform includes a secure and intuitive dashboard where providers can manage their availability slots, view and confirm booking requests, and update their service information. Real-time

booking notifications and confirmation flows enhance provider responsiveness and customer satisfaction.

The **admin panel** offers comprehensive control over the platform. Admins can view all bookings, manage user and provider accounts, and verify payment screenshots uploaded by users to confirm completed transactions.

With a **mobile-friendly, responsive design**, the application ensures a seamless user experience across all devices. It incorporates **real-time confirmation**, intuitive navigation, and adherence to modern UX/UI practices. By combining powerful backend logic with a sleek frontend interface, this project delivers an effective tool for digital appointment management, benefitting users, providers, and administrators alike.

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