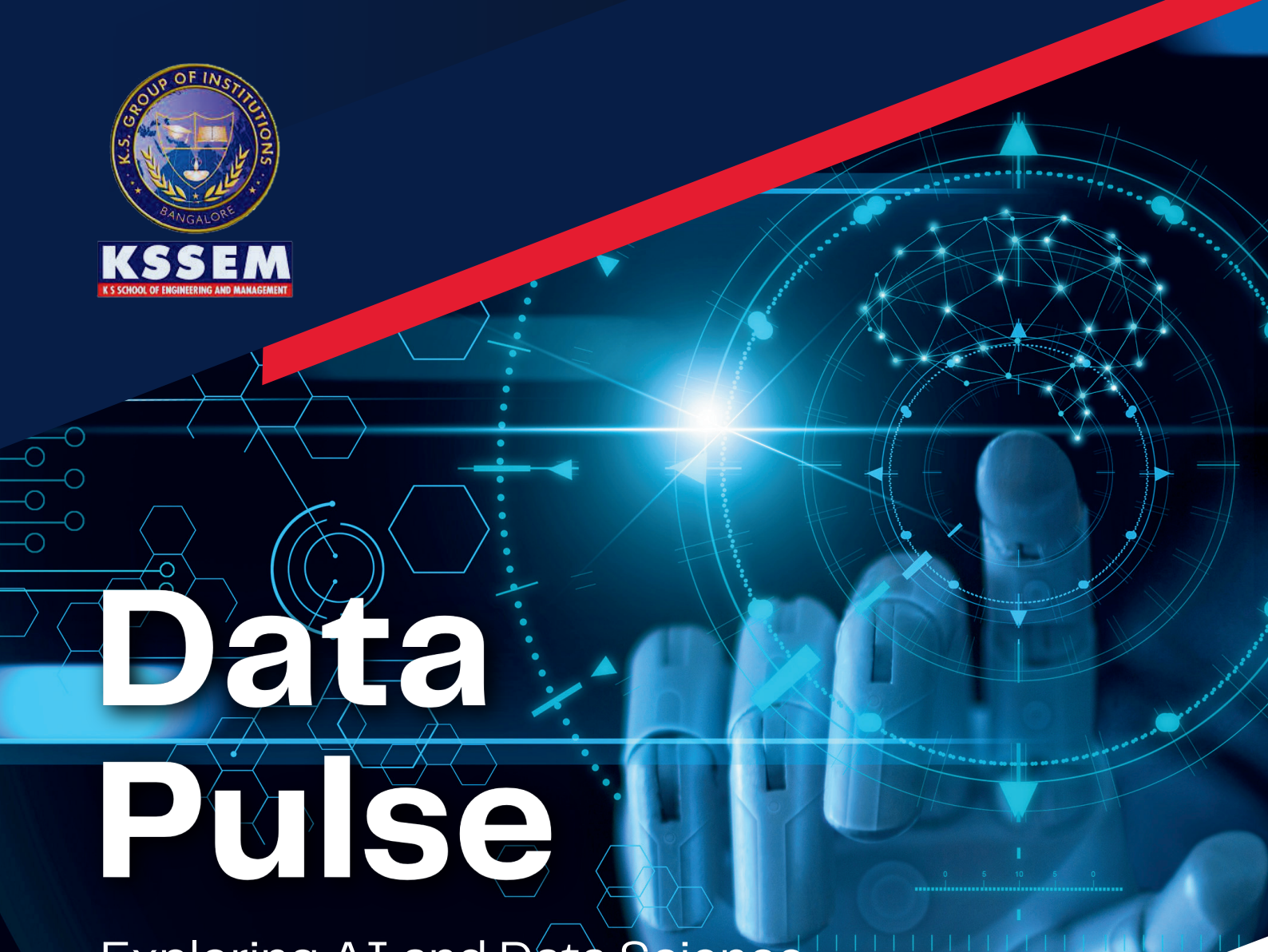


Data Pulse

Exploring AI and Data Science

Volume 1

2022-23

A Newsletter by

Department of AI&DS

ARTIFICIAL INTELLIGENCE DATA SCIENCE

VISION

To be recognized globally for the excellence of Artificial Intelligence and Data Science Research and Innovation

MISSION

To deliver a high-quality education by fostering a transformative environment where students are encouraged to thrive in their academic endeavors, to prepare students to obtain application knowledge in burgeoning industry and to become deeply knowledgeable in Artificial Intelligence and data science.

To give students the opportunity to fully develop their own skills and realize their potential, while being taught by experienced, skilled, and committed staff, to uphold a degree of competence and standard in all the courses they take to become experts in data science and Artificial Intelligence.

To improve and equip students with the skills they need to favorably impact society through the use of this cutting edge technology.

Index

Foreword

Sri. R. Rajagopal Naidu
President

I feel very proud to see the good work being done at the Department of AI&DS at KSSEM. At Kammavari Sangham Group of Institutions we strongly believe in providing a holistic education for an all round development of our students and here is the proof for all this. We believe in creating a good learning environment so that the students evolve into highly enviable professionals.

I congratulate the staff and students for their efforts in showcasing the activities they had during the previous term and wish them the very best in all their academic endeavors.

I am extremely pleased to see the excellent presentation of the spectrum of activities that the Department of AI&DS at KSSEM has arranged during the previous academic term. These activities give a good depth of knowledge and practical exposure to make our students better Engineers. The commitment shown by the faculty to arrange these co-curricular and extra-curricular activities is highly commendable. I would like to reiterate the Management's support for all the good work that is being done in the Department.

I take this opportunity to congratulate the staff and students for their wonderful efforts in showcasing their activities and projecting their department in a very nice manner.

Sri. R. Leela Shankar Rao
Hon. Secretary

Sri. T. Neerajakshulu
Hon. Treasurer

I am very happy to see this Newsletter brought out by the Department of AI&DS at KSSEM. We at KSGI are totally committed to give maximum value addition to our students in terms of learning experiences and we encourage all our departments to arrange a lot of co-curricular activities that add value. I am happy to see the various opportunities that this department has offered to its students.

I congratulate the staff and students of the Department of Artificial Intelligence & Data Science for all their good work in bringing out this News Letter. I wish them the very best in all their future academic endeavors.

Foreword

Dr. K V A Balaji
CEO, KSGI

I am pleased that the Department of AI&DS at KSSEM is bringing out the First Volume of its NEWSLETTER and the Editorial Team is deeply immersed in potraying all the activities held during the last academic year. Along with the regular teaching learning activity the department is engaged in creating a lot of other learning opportunities that will expose the students to various new and allied fields and encourages the students to acquire required skill sets required for tomorrow.

I whole heartedly congratulate the entire team of staff and students for all their efforts in keeping the flag of KSSEM high and wish them the very best in all their academic endeavors.

I am happy to note that the Department of Artificial Intelligence and Data Science of KSSEM is bringing out the first volume of its newsletter. The newsletter is highlighting the different activities of the Department.
I believe that this newsletter will be a platform for the faculty and students to showcase their skills and talent. I hope that the students and faculty will use this and publish their articles highlighting the recent advances of Data Science. I congratulate the editorial team for their efforts. My appreciation to the Department for bringing out the Newsletter. I wish Good Luck to the newsletter.

Dr. K Rama Narasimha Rao
Principal/Director

Mr. Manjunath T.K.
Associate prof. & HOD

We are thrilled to announce the launch of the Artificial Intelligence and Data Science (AI&DS) Department at KSSEM. Our mission is to develop the next generation of technologists with a strong foundation in AI and data science through rigorous assessments, hands-on learning, industry partnerships, and research initiatives. Beyond academic excellence, we prioritize innovation and ethical AI development. We encourage students to participate in our diverse offerings, including workshops, seminars, technical talks, guest lectures, and collaborative projects. Together, we will navigate the evolving technological landscape and pave the way for future leaders and innovators

About the Newsletter.

The AI&DS Department Newsletter is your go-to source for updates, insights, and achievements within our department. In this inaugural edition, we bring you a curated collection of departmental events, student and faculty accomplishments, the latest trends in AI, compelling articles, and opportunities for exploring careers in this dynamic field.

Our aim is to foster collaboration, knowledge exchange, and the celebration of achievements within the AI&DS community. Whether you are a student, faculty member, or industry professional, we invite you to engage with us and be a part of the conversation.

Thank you for joining us on this journey, and we look forward to sharing valuable content with you in each edition.

Entrance of the Department

Staff Room

Infrastructure

Labs

B206 - Analaog & Digital Electronics/Microcontroller Lab

B214 - Java and Python Programming Lab

B205 - Design & Analysis of Algorithms, Data Structures Lab

B205

B205

Our labs house a total of 89 systems, each equipped with advanced hardware and software tailored for diverse tasks such as data analysis and software development. Regular maintenance and upgrade plans keep the hardware and software up-to-date. Each lab is also equipped with a projector to facilitate presentations and collaborative work. The network is securely configured with robust security protocols.

Smart Library

Our Smart Library is equipped with modern facilities to enhance the learning experience. It features 10 computers, each providing seamless internet access for research and online learning

Tutorial Room

Tutorial room aims to create a dynamic educational environment where students actively engage with course material and work towards their academic goals. These spaces are designed for versatile use, supporting content delivery, interactive learning activities, and discussions. Tutorials offer a unique opportunity for students to connect with lecturers and peers, fostering independence and deeper understanding of the subject matter.

Room no. B209

Classrooms

Each of our department's classrooms is equipped with projectors, allowing faculty to display presentations, videos, and other multimedia content. This enhances the learning experience by making lectures more engaging and interactive. Students benefit from visual aids that complement the course material, helping to illustrate complex concepts and improve comprehension. The projectors also facilitate group discussions and collaborative projects, contributing to a dynamic and enriched educational environment.

Classroom B201

Classroom B203

Classroom B202

Classroom B201

Faculty

Mr. Manjunath T.K.
Associate Professor and Head

Mrs. P S Geetha
Assistant Professor

Mrs. Madhusmitha Mishra
Assistant Professor

Mrs. Pavana H
Assistant Professor

Non Teaching Staff

Mrs. Lakshmi G
Office Assistant

Mr. Manjunath S
Programmer

Mr. Naresh P G
Programmer

Mrs. Pallavi V
Programmer

MOUs Signed

EXCELR.PVT.Ltd.

2023-2025

Student Development & Faculty Development Programs on Different Emerging Software Technologies

PYGENICARC

2023-2025

Develop required products, educate the Trainee/Student in the field of AI, Machine Learning Techniques, Data Science, Python, Web Applications, and DevOps to gain practical knowledge made available by internships and any other technologies.

Department Events

IOT Workshop

Dr. Srinivasa Setty
SST Technologies

Visit to Bangalore TechSummit

Visit to Art of Living

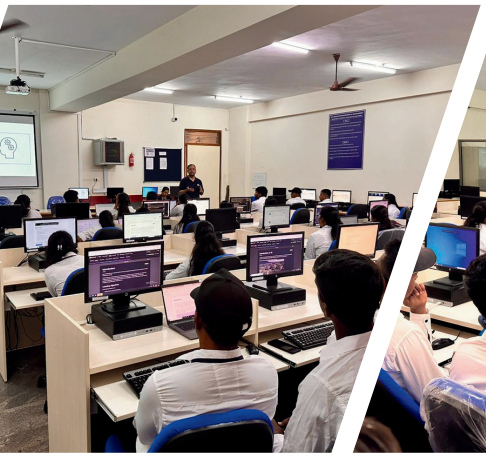
Expert Talk on Design and Analysis of Algorithms

Dr. Girish Rao Salanke
Professor-RVCE

Department Events

Workshop on Azure AI Fundamentals

IN_BIOT Pvt. Ltd.



Advanced Excel Workshop

IN_BIOT Pvt. Ltd.

Govt. School Rejuvenation Program

Badminton Tournament

Student Achievements

Academics

3rd Semester Toppers

1 **VANDANA C**
1KG21AD056

2 **DIVYASRI M**
1KG21AD007

3 **VAISHNAVI D**
1KG21AD055

4th Semester Toppers

1 **VANDANA C**
1KG21AD056

2 **VAISHNAVI D**
1KG21AD055

3 **DIVYASRI M**
1KG21AD007

Sports

PRAJWAL C L
Obtained first place in
State Dodgeball Championship

Other Achievements

Naina R Koushik
Successfully completed a data engineering internship at SANAS AI PRIVATE LIMITED.

Vaishnavi Dayanand
Completed web development internship in MCJ Accounting Training Institute.

Vandana C
Completed a virtual internship in the Future Ready Talent.

Tejas M
Completed Data Analyst Internship at Carl Zeiss India (Bangalore) Pvt. Ltd

M N Ganesh
Completed Microsoft
Azure AI Fundamentals Certification

Vaishnavi Dayanand
Lead the Google Developer
Student Clubs (GDSC) at KSSEM

Tamanna Ahmad
Facilitator for Android Study
Jams under GDSC.

What's New in AI

Google Deepmind's Alpha Fold 3

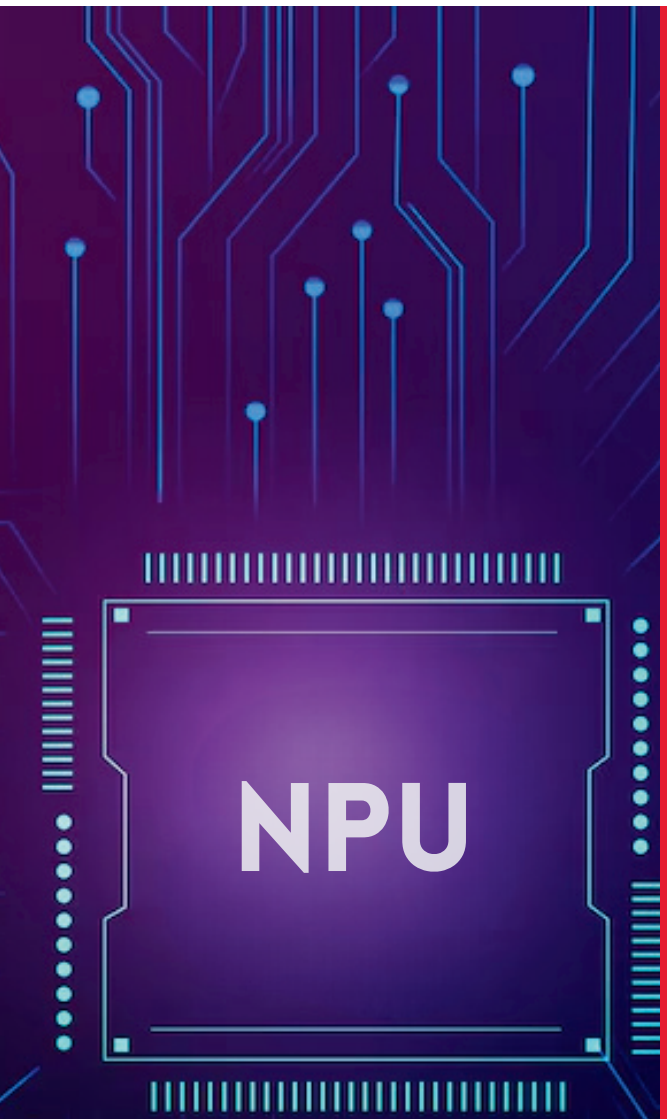
AlphaFold 3 is a scientific breakthrough in protein structure prediction. It discusses protein folding, a challenge in biology that has existed for decades. AlphaFold 3 predicts the three-dimensional structures of proteins from their amino acid sequences with high accuracy.

This is important because it can accelerate scientific discovery in many fields.
AlphaFold was developed by DeepMind. In 2021, DeepMind released AlphaFold 2, a version that achieved a high level of accuracy. AlphaFold 3 was released in 2024, and it can predict the structure of all of life's molecules.

DeepMind has made AlphaFold's predictions publicly available through a database. This database includes millions of protein structures, including the human proteome. AlphaFold is also available as a user-friendly research tool.

What's New in AI

Neural Processing Unit(NPU)



What is an NPU?

Think of an NPU as a specialized co-pilot for your laptop's main processor (CPU). CPUs are great all-rounders, but NPUs excel at specific tasks – particularly those involving artificial intelligence (AI) and machine learning (ML). Imagine complex calculations for image recognition, video editing, or voice assistants – NPUs are built to handle these tasks efficiently, freeing up the CPU for other things.

Benefits of NPUs in Computers:

- *Enhanced AI Features:* NPUs can significantly improve features like background noise reduction in video calls, real-time object recognition, and intelligent photo editing.
- *Faster Performance*: By handling AI tasks, NPUs allow the CPU to focus on core computing needs, leading to smoother performance and potentially longer battery life.
- *Unlocking New Applications:* NPUs could pave the way for innovative AI-powered applications like real-time language translation or personalized learning tools.

Article

Neumorphic Computing

Our traditional systems think and work in binary, everything is 0 or 1. What do we ask? What do we want? Everything is in binary. Neuromorphic is a little more flexible than this. Neuromorphic computing means designing and engineering computer chips that use the same physics of computation used by our own nervous system. Instead of using an electric signal to mean one or zero, designers of these new chips want to make their computer neurons talk to each other the way biological neurons do.

How does neuromorphic computing work?

Neuromorphic computing uses hardware based on the structures, processes and capacities of neurons and synapses in biological brains. The most common form of neuromorphic hardware is the Spiking neural networks (SNN). In this hardware, nodes or spiking neurons process and hold data like biological neurons. One of the defining features of neuromorphic computing is synaptic plasticity mimicking the brain's ability to strengthen or weaken connections based on activity.

Applications : Driverless cars, Drones, Robots, Smart home devices, Natural Language Processing, Process optimization.

Conclusion:

With ongoing research and development, this transformative field is poised to reshape industries, enhance human machine interactions, and unlock the next frontier of intelligent computing

Varun Bharadwaj B.N.
1KG21AD059

Article

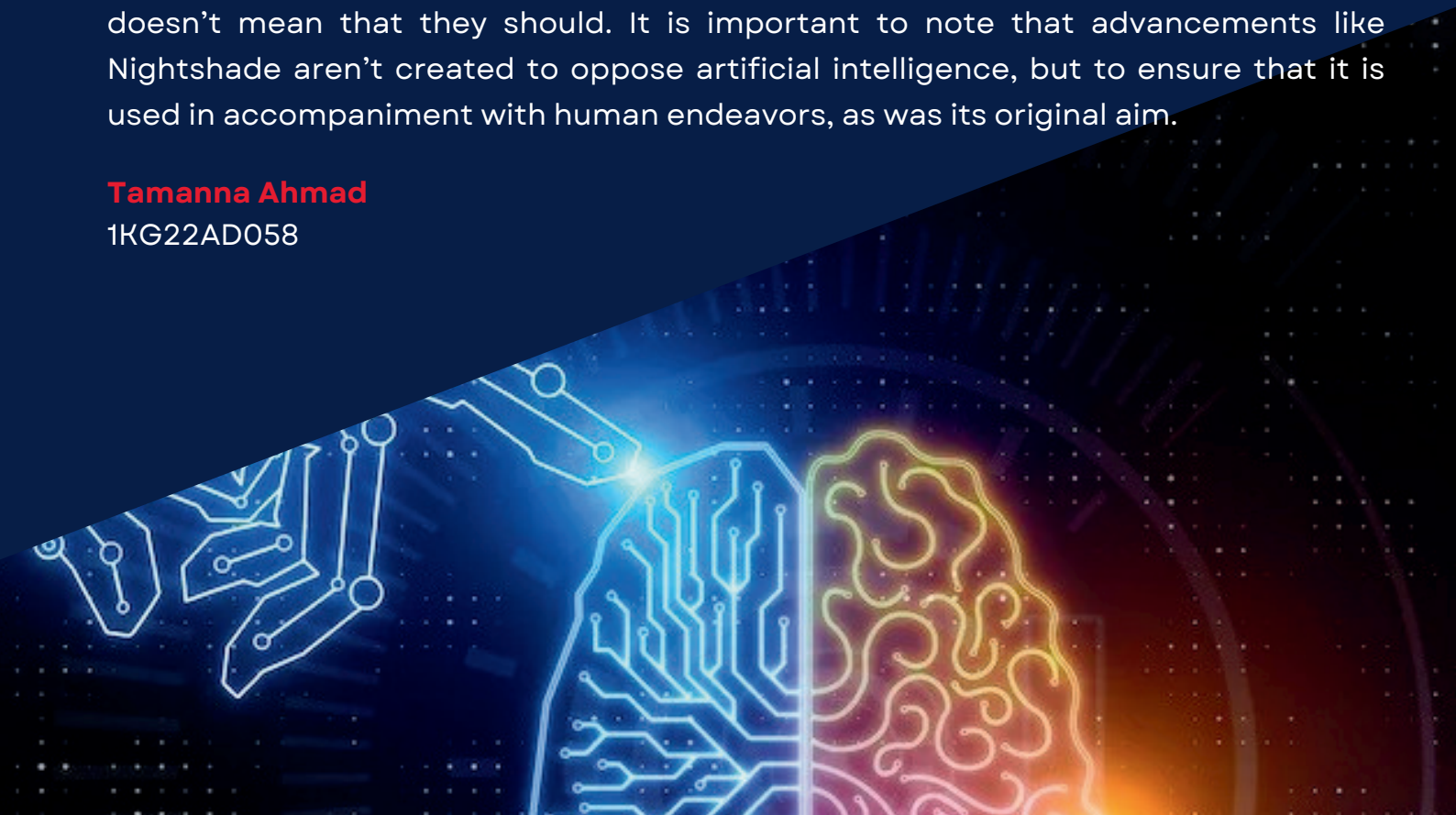
Innovation with Integrity

Similar to any Artificial Intelligence model, image generative models require large amounts of data to recreate and generate material. The obtaining of this training data has become the subject of scrutiny in discussions regarding AI ethics. Many artists have reported discovering that their artworks had been scraped into the training dataset of image generation AI models without their permission or knowledge. These artworks are copyrighted material, and unauthorized use of them undermines the rights of the creators.

Enter the Glaze Project, designed by a team at University of Chicago to combat AI models that mimic the style of artists. It adopts a defensive strategy by masking the style of the glazed works. These appear stylistically different to AI models, making the replication of said artworks unreliable. Another tool developed by the same team, Nightshade, conversely adopts an offensive strategy against model trainers who disregard the consent of artists. The difference is that Nightshade distorts the AI model's perception of certain objects – for example, an elephant is perceived as a vehicle – hence "poisoning" the samples..

The Glaze Team agrees that it is entirely possible that advancement in AI models can eventually subvert the efforts of these tools. There have been successful attempts to do so already. However, just because certain things can be done, doesn't mean that they should. It is important to note that advancements like Nightshade aren't created to oppose artificial intelligence, but to ensure that it is used in accompaniment with human endeavors, as was its original aim.

Tamanna Ahmad
1KG22AD058



Article

Advancements in Speech Recognition Technology

Modern human-computer interface is reliant on speech recognition technology, which has revolutionized our engagement with technology. Speech recognition has been ingrained in many facets of our daily lives, from dictation software and automatic transcription services to virtual assistants like Siri and Alexa. This article explores the developments, uses, and difficulties of voice recognition technology, emphasizing both its immediate and long-term possibilities for change.

The Rise of Virtual Assistants:
Voice recognition technology finds widespread use in applications such as virtual assistants. These intelligent agents can comprehend and reply to user inquiries in conversational language thanks to machine learning and natural language processing (NLP) techniques. They have a wide range of applications, such as the ability to play music, answer queries, create reminders, and operate smart home appliances.

Applications Across Industries:
Innovation has been sparked across a number of industries by the broad use of speech recognition technologies. It makes hands-free recording easier in the healthcare industry, allowing doctors to quickly transcribe patient notes and medical data.

Kiran Kumar M
1KG21AD018

Article

The Rise of AI Assistants

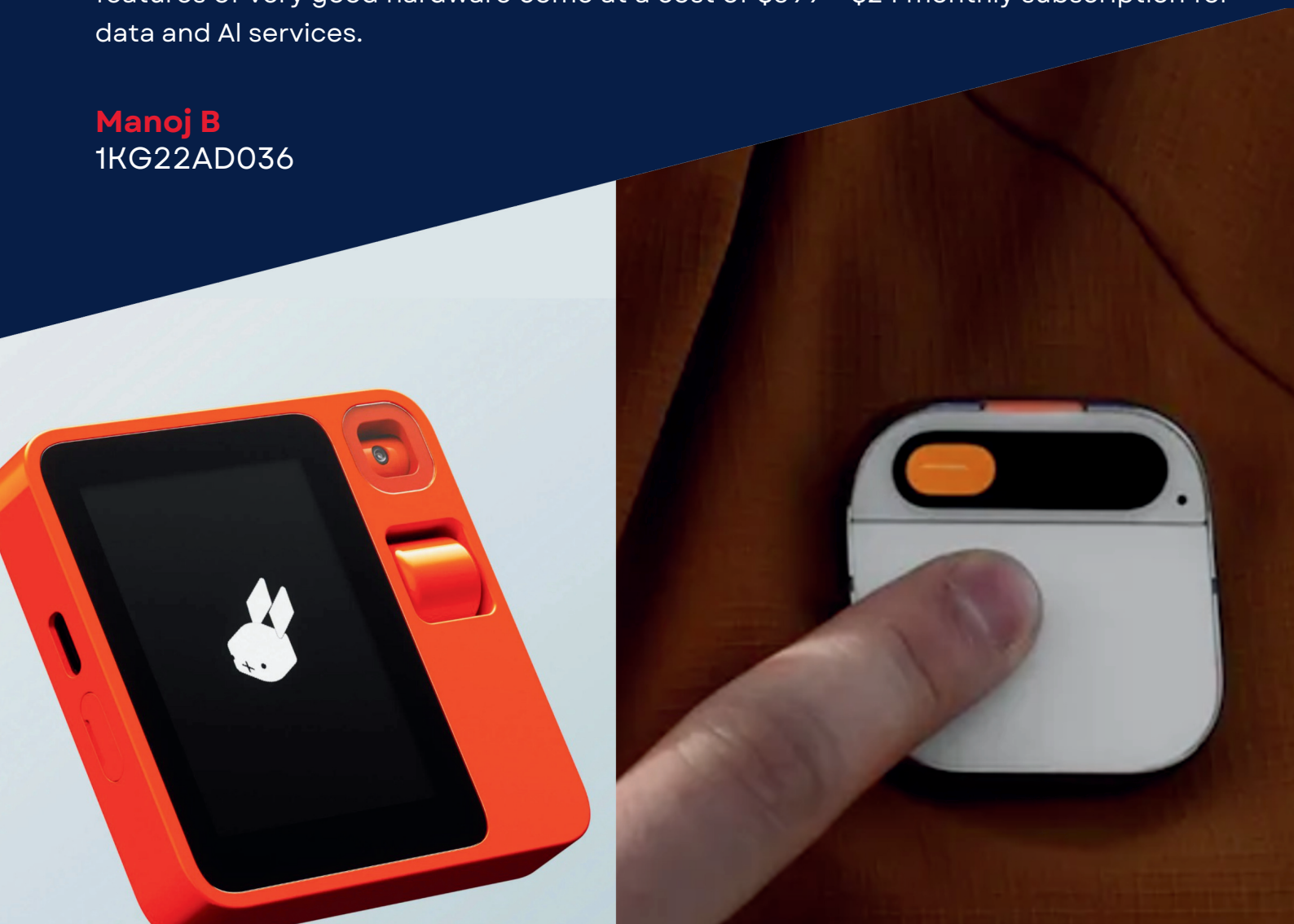
RABBIT R1

The Rabbit R1 is an innovative AI voice assistant device equipped with the Rabbit OS operating system and the Learning Action Model (LAM) technology. The Specification of Rabbit R1 resembles close to an android smartphone with a 2.88-inch screen, runs on a 2.3GHz MediaTek MT6765 processor, and has 128GB of storage and 4 GB of RAM. It has a speaker on the back, two mics on the top, and a SIM card slot on the side right next to the USB-C charging port, and costs $199. The device is designed and engineered with Teenage Engineering and can play music, get answers to questions, translate speech, take notes, summon an Uber, and a few other things.

HUMANE AI PIN

The Humane AI Pin is a unique AI assistant that discards the screen for a voice interface and projector. This lightweight device magnetically attaches to your clothes, offering features like hands-free calls, text messages, and web searches. It can also do real-time language translation. The AI Pin runs ChatGpt-4 for interacting with users. It runs CosmOS and is powered by a Qualcomm Snapdragon processor. All these features of very good hardware come at a cost of $699 + $24 monthly subscription for data and AI services.

Manoj B
1KG22AD036



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