Samarth Sarvade

Research Enthusiast

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Summary

Consistently work on problem solving skills & presenting views is my key feature to procure. Being a good person and a good researcher, I am committed to producing high-quality work while treating others with kindness, respect, & professionalism. Experienced in Python frameworks, Cloud Computing, Embedded Systems, Internet of Things and Machine Learning, paired with exceptional leadership and team collaboration skills.

Skills

- Programming Languages   Python, C, Embedded-C | Database: SQL, MongoDB
- Frameworks & Libraries   Flask, NumPy, Matplotlib, Scikit-learn, OpenCV, Pandas, TensorFlow
- Technologies   Cloud Computing, Embedded Systems, Machine Learning, Internet of Things
- Tools   Power BI, Matlab, Git, VS Code, Arduino IDE, Jupyter, Google Colab

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Projects

Human-Aid Voice Assistance Robo   **September 2023**
- Designed and developed a voice-enabled assistant robot capable of detecting human presence using the HuskyLens AI camera integrated with a microcontroller system, with backend logic implemented in Python using TensorFlow for real-time processing and secure data handling.
- Implemented real-time voice interaction using the ChatGPT Voice API, supported by natural language processing modules built with spaCy and Transformer-based models, enabling voice-controlled smart home integration and seamless user communication.
- Integrated core features tailored for patient care, including medication reminders, vital sign monitoring prompts, personalized nutrition and exercise suggestions, emergency alert systems, and adaptive health insights based on continuous interaction.

AgroGuard: Intelligent Farm Cover Control & Climate Management System   **March 2024**
- Traditional farming faces increasing challenges from unpredictable weather, resource inefficiencies, and the growing demand for sustainable practices. To address these developed a novel project, Agroguard integrates IoT, automation, and machine learning to create a responsive farm-cover system that automatically adapts to real-time conditions.
- This intelligent system adjusts crop protection based on temperature, rainfall, and humidity, reducing manual intervention and conserving resources. With a user-friendly interface providing insights and alerts, farmers can make informed decisions with ease.
- Agroguard not only strengthens crop resilience and yields but also promotes sustainable resource management, marking a significant advancement in precision agriculture.

Predictive Cyber Threat Dashboard for Indian Cyberspace   **November 2024**
- A web app that scrapes and summarizes the latest cybersecurity news in cyberspace using LLM (Llama 3), analyzing threats like Phishing, Malware, and Ransomware. It presents insights through interactive charts and provides preventive measures based on past cyber incidents, ensuring quick, actionable threat intelligence.
- Utilized Python frameworks like Flask for the backend, Dash with Plotly for the interactive UI, BeautifulSoup for web scraping and APIs like Groq AI for text summarization, integrating multi-source data for real-time cybersecurity insights.
- Achieved dynamic visualizations with interactive Bar and Pie charts that display trends in phishing, malware, and ransomware incidents, enabling identification of threat types in real time. This analyzed data supports actionable insights & preventive measures across sectors, ensuring authenticated & timely threat intelligence.

QR Code Authentication: Detecting Original vs. Counterfeit Print **March 2025**
- Developed a hybrid ML model combining traditional computer vision (HOG + SVM) with deep learning (CNN) to accurately classify genuine from counterfeit QR codes.
- Utilized TensorFlow, scikit-learn, OpenCV, seaborn and scikit-image for image preprocessing, augmentation, and feature extraction ensuring robust input data handling.
- Achieved 95.54% validation accuracy with the CNN compared to 74% with the SVM, demonstrating strong resilience against scanning artifacts and subtle print differences.
- Integrated classical methods with deep learning while leveraging GPU acceleration (using CUDA and cuDNN) for efficient model training and improved computational performance.

Research Papers

[1] Bakare, Revansidh S., and Samarth R. Sarvade. "Agroguard: Intelligent Farm Cover Control and Climate Management System." *Grenze International Journal of Engineering & Technology (GIJET)* 10 (2024). *([Scopus](#))*

[2] Sarvade, Samarth, Vijaykumar Shirwal, Parth Kugaonkar, and Kartik Mudgonda. "Optimizing Railway Signaling and Platform Management with LoRaWAN, RFID and Automation Technologies." *Procedia Computer Science* 252 (2025): 557-566. *([Scopus](#))*

Patents

- AgroGuard: Intelligent Farm Cover Control & Climate Management System   ([202321074026](#) Issued Dec 2023)

- Automated Coach Identification & Stopping s/s for Indian Railway Stations   ([202421061024](#) Issued Aug 2024)

- Advanced Smart Matching and Tracking for Superior Roadside Assistance   ([202441064062](#) Issued Sept 2024)

Education

- **Bachelor of Engineering (BTech) - Electronics & Telecommunication**   [Marksheet](#)
  Nagesh Karajagi Orchid College of Engineering and Technology, Solapur - (Academic Year 2021-2025)

- **12th - Higher Secondary School Certificate (HSC)**   [Marksheet](#)
  Walchand College of Arts and Science, Solapur – (Academic Year 2019-2021)

- **10th - Secondary School Certificate (SSC)**   [Marksheet](#)
  Hindustani Covenant Church English Medium High School, Solapur - (Academic Year 2018-2019)

Community Experience

Google Developer Student Clubs, NKOCET - [Lead](#) **July 2023 - August 2024**
Google DSC Founding Lead at the Institute. Organized hackathons like Solution Challenge and pivotal events like GenAI. Conducted multiple successful in-person events, workshop and meetups on emerging technologies, nurtured a proficient team and helping students understand technology's role in solving real-world issues. Successfully graduated by GDSC.

Google Cloud Arcade Program - [Facilitator](#) **July 2024 - September 2024**
Led Google Cloud Arcade events at the institute for two consecutive terms, guiding over 1,050+ students in total. Collaborated with Google Cloud India to provide virtual sessions on GCP services, achieving the Ultimate Milestone. Successfully enabled hands-on experience for participants through the program.

FOSS United, Solapur - [Member](#) **May 2023 - December 2023**
SolapurFOSS is the first ever truly spirited FOSS Conference in Solapur, which aims to bring together students, professionals, and FOSS enthusiasts, so that we can learn from and inspire each other. Led Outreach Team, organized Solapur's first FOSS Conference, and pioneered community engagement in Free and Open-Source Software.

I hereby declare that the information contained herein is true & correct to the best of my knowledge and belief.

Competitions & Awards

Aavishkar Zonal & University Level (Gold), State Level   **November 2024 - January 2025**
- First Prize twice in Agriculture and Animal Husbandry domain for AgroGuard: Intelligent Farm Cover Control & Climate Management System.
- Developed an IoT-based agricultural system that automatically covers crops to protect them, using real-time data and AI to optimize yields and resource management while minimizing manual intervention.

Finalists for Intelliswift Innovation Hackathon   **September 2023**
- Kisan Ki Duniya an Android Application that consolidates government scheme information, e-commerce features, APMC price updates, informative articles, and weather forecasts.
- Designed to empower small farmers by providing accessible modern resources and information.

Certifications and Badges

- **Getting started with Data Analytics on AWS**   **Link**
  Understand data analysis types such as descriptive, diagnostic, predictive, and prescriptive. Perform descriptive analytics in the cloud using datasets & create visualizations in AWS QuickSight using S3, CloudTrail & Athena.

- **AWS Technology - Cloud Essentials**   **Link**
  Developed knowledge of foundational AWS Cloud concepts with a focus on AWS Compute, Storage, Networking and Database services, security, architecture, pricing, and support.

- **Designing and Implementing Microsoft DevOps Solutions (AZ-400)**   **Link**
  Understand design and implementation of Microsoft DevOps solutions using CI/CD, automation and infrastructure as code. Streamline delivery, enhance collaboration and optimize deployment efficiency.

- **Google Cloud Qwiklabs**   **Link**
  Completed hands-on labs and quests, gained practical experience in deploying cloud resources, managing services, and implementing solutions using core GCP tools.

- **NPTEL - Computing in Python**   **Link**
  Focusing on logical problem solving and code structuring in Python Programming. Gained hands-on experience with core programming concepts and explored emerging trends in computing.

- **NPTEL - Operating System Fundamentals**   **Link**
  Gained a solid understanding of operating system fundamentals including process, memory, storage and user management. Explored OS architecture, core concepts and their applications in modern commercial systems.

- **Oracle Cloud Infrastructure Foundations**   **Link**
  Developed knowledge of Oracle Cloud Infrastructure components including compute, storage, networking, databases, and IAM. Understood OCI architecture, cloud security principles, and resource administration.

- **MathWorks - Matlab Onramp**   **Link**
  Gained hands-on experience with MATLAB for data import, visualization & analysis using real-world scenarios. Applied core MATLAB functions to analyse astronomical data & interpret motion through signal patterns.

Extracurricular

Accolades: Nxt WAVE; Shri Siddheshwar Women's College of Engineering; N. K. Orchid College of Engineering and Technology; GDSC India, Peer Reviewer for Environmental Engineering and Management Journal (EEMJ)

Other Projects: Human-Aid Voice Assistance Robo for Specathon 2023, Cyber Spam Detection for DIPEX 2024 exhibition cum competition

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