NANDU PANAKANTI

Full Stack Developer

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I'm a motivated and detail-focused professional with a solid background in software development, web technologies, and deep learning frameworks. I genuinely enjoy tackling challenging problems and love learning new tools and technologies to keep growing. Whether working on my own or as part of a team, I thrive in fast-paced environments where I can contribute meaningful solutions. I'm passionate about turning ideas into real-world applications that make a difference. Clear communication and collaboration come naturally to me, which helps when working with others or understanding what clients and stakeholders need. I'm eager to bring my analytical mindset, problem-solving skills, and dedication to a forward-thinking company where I can both contribute to their success and continue to grow professionally.

Skills

Programming Languages: Java, SQL, Python, JavaScript, Typescript, PHP.
Web Development: HTML, CSS, Node.js, Express.js, React.js,
Database Management & ORM: SQL Server, MongoDB, Oracle, MySQL, Word, PowerPoint Presentation.
Cloud Tools: AWS IAM, Security Groups, Grafana, Amazon RDS, AWS CLI and Azure.
Version Control & Build Tools: GIT, GitLab, and GitHub.
Other: MS Office, HFSS Software, Arduino and Deep Learning.

Professional Experience

Central Institute of Tool and Design|Research Analyst **Aug 2023 - Jun 2024**

- Built a smart distance measuring system using an **HC-SR04 ultrasonic sensor** to detect nearby objects with accuracy.
- Measured how long it takes for ultrasonic waves to bounce back from an object to determine its distance.
- Programmed an **Arduino Uno** to calculate distance in real-time using the time delay from the sensor.
- Wrote and tested custom code in the **Arduino IDE**, handling precise timing and sensor communication.
- Displayed live distance readings through the **serial monitor** and explored visual output using graphs or LCDs.
- Carefully connected components like the sensor, breadboard, and jumper wires to create a reliable setup.
- Calibrated the system to reduce false readings and ensure consistent results across different test scenarios.
- Ran multiple tests by placing objects at various distances to validate accuracy and responsiveness.
- Troubleshot issues with code logic and wiring until the system produced clean and repeatable results.
- Learned how sensors, timing functions, and real-world physics come together in a hands-on project.
- Key skills developed: **Ultrasonic Sensing**, **Arduino Programming**, **Delay Analysis**, **Measurement Systems**, and **Hardware Prototyping**.

Projects:

StudyMate — Web-Based Educational Management System

- Developed a PHP & MySQL-based platform (LAMP stack) connecting students and administrators for managing sessions, file uploads, and notifications.
- Implemented secure user authentication with role-based access control (RBAC) and password hashing.
- Built dynamic server-side rendered frontend using **PHP, HTML, CSS, JavaScript, and Bootstrap** for dashboards and forms.
- Managed backend logic with PHP, including session handling, database interactions (PDO), and reusable components for consistent layouts.
- Designed and maintained MySQL database schema for users, sessions, ratings, uploads, and notifications, automated setup with migration scripts.
- Integrated PHPMailer for email notifications, supporting registration verification, session approvals, and password resets via **SMTP/OAuth2.**
- Enabled file management for assignments and profile uploads, linking them securely to user accounts.
- Streamlined workflow: **login → dashboard → session management → ratings → notifications, emphasizing simplicity, security, and maintainability.**

Community Food Sharing Platform

- Developed a **cloud-based web platform** connecting food donors (restaurants, households) with receivers (NGOs, shelters, individuals) to reduce food waste.
- Implemented **user registration and role-based authentication** using Firebase Authentication for secure donor/receiver access.
- Built a **food posting system** with image uploads and expiry tracking, stored on **Firestore/MongoDB Atlas** and Firebase Cloud Storage.
- Integrated **Google Maps API** to display nearby food listings for easy pickup and geolocation-based matching.
- Enabled **real-time notifications** using Cloud Functions to alert users when donations are matched.
- Created a **community dashboard** to track total food donated, pickups, and overall impact metrics.
- Used **React.js frontend**, **Node.js (Express) backend**, and **Firebase/Vercel hosting**, demonstrating full-stack cloud development skills.

Developed a property management platform

- Developed a full-stack web platform to connect property seekers with property managers, streamlining the entire rental process.
- Integrated digital tenant applications to allow users to easily apply for properties online, reducing paperwork and processing time.
- Automated deposit handling, including refunds on cancellations, improving transparency and trust between tenants and managers.
- Enabled flexible rent payment options via **Stripe and PayPal**, supporting one-time and recurring payments with real-time status updates.
- Built a secure Admin Dashboard for managing users, property listings, lease agreements, and application workflows.
- Implemented real-time notifications using **Twilio and Firebase**, keeping tenants and managers updated on application status, payment receipts, and lease milestones.
- Focused on secure authentication and access control, ensuring role-based views and actions for tenants, managers, and admins.

- Used a modern tech stack: React.js (or Angular) for a responsive front-end, Node.js/Express.js for a scalable backend, and MySQL or MongoDB for structured data storage.
- Provided transaction history and activity logs, allowing users to track their interactions and financial records in one place.

AI-Powered Deepfake & Misinformation Detection System

- Developed a multimodal AI system to detect deepfake videos, voice cloning, and fake news by analyzing video, audio, and text simultaneously.
- Implemented CNN-based models for video frame analysis, **RNN/CNN** for audio spectrograms, and Transformer models **(BERT/RoBERTa)** for textual content.
- Fused video, audio, and text features using an attention-based multimodal fusion layer to improve detection accuracy.
- Collected and processed large-scale datasets: **DFDC (videos), ASVspoof (audio), and FakeNewsNet (text),** with preprocessing for frames, landmarks, spectrograms, and NLP tokenization.
- Integrated explainability tools **(Grad-CAM, SHAP/LIME)** to highlight suspicious video regions, manipulated audio segments, and misleading text.
- Evaluated model performance using **precision, recall, F1-score, AUC-ROC,** and tested robustness against adversarial attacks.
- Delivered a socially impactful system for real-time media verification, cybersecurity, and misinformation prevention with >90% expected detection accuracy.
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Designer of MQWC Bandpass Filter System (BPFS)

- Designed a **Multi-Quarter Wave Choke (MQWC) Bandpass Filter System (BPFS)** using **HFSS (High Frequency Structure Simulator)** to support high-frequency communication systems.
- Focused on **optimizing the filter structure** for superior harmonic suppression, minimizing unwanted signals and improving overall bandwidth efficiency.
- Simulated and analysed the system's **S-parameters, return loss, and insertion loss** in HFSS to validate frequency response and design accuracy.
- Tuned key design parameters such as **resonator lengths, coupling gaps, and substrate material properties** to meet strict radar communication specs.
- Applied electromagnetic theory and practical design principles to ensure the filter met real-world performance needs in

complex environments.

- Improved **radar system performance** by significantly enhancing **harmonic rejection and signal quality**, leading to clearer, more accurate target detection.

University of Central Missouri | Master's in Computer Science **2026 (Pursuing)** **3.56 GPA**
Sreyas Institute of Engineering and Technology | Bachelor's of Technology **2024** **3.6 GPA**