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KARTIK GUND

SUMMARY

Results-driven .NET Developer with over 3+ years of experience in architecting and delivering robust, full-stack applications. Specializes in building scalable solutions using ASP.NET Core, Web API, and microservices architecture. Proven expertise in developing real-time highway monitoring systems, optimizing database performance in PostgreSQL and MSSQL, and building responsive frontends with Angular. Successfully integrated complex backend services, including AI/Computer Vision systems, to deliver feature-rich enterprise applications

TOOLS AND TECHNOLOGIES

- **Languages & Backend**: C#, ASP.NET Core, ASP.NET MVC, Web API, Python
- **AI & Machine Learning**: YOLO, PaddleOCR, OpenCV, NCNN
- **Frontend & Visualization**: Angular, AngularJS, JavaScript, HTML5, CSS3, Chart.js, Leaflet.js, Bootstrap
- **Databases & Data Management**: PostgreSQL, MSSQL, ADO.NET, Entity Framework, Query Optimization, Stored Procedures
- **APIs & Real-time Systems**: RESTful APIs, Microservices Architecture, RTSP Streaming, Windows Services
- **Tools & Environment**: Git, GitHub, SVN, Visual Studio, VS Code, Postman, Nginx, IIS, Docker

PROFESSIONAL EXPERIENCE

Arya Omnitalk Wireless Solutions, Pune— *Assistant Manager (Software Development)*

JUNE 2022 – PRESENT

- **Contributed to highway control room software (NEXGEN)** development using .NET MVC, integrating multiple device types including cameras, VMS, ATCC, ECB, and meteorological sensors with real-time status monitoring and interactive map visualization using Leaflet.js
- **Built internal tracking tool** (Consolidated Site Data Summary) using .NET Core to help field installation teams and development team communicate device integration status across highway sites, providing real-time project visibility and progress tracking
- **Maintained and enhanced existing cash flow management system (CDS)** for toll plaza operations, implementing client-requested features and improving database performance through stored procedure optimization in MSSQL
- **Developed ANPR system for edge deployment** on Raspberry Pi 5, achieving 95% recognition accuracy on Indian license plates by training and fine-tuning YOLO models with PaddleOCR, processing real-time RTSP streams at 15 FPS with Flask backend and PostgreSQL integration
- **Implemented real-time data processing features** across projects including RTSP streaming integration, device status monitoring services, and alert systems that reduced manual monitoring tasks and improved operational workflows
- **Improved system performance** through database query optimization, AI model compression for resource-constrained devices, and efficient data processing implementations that enhanced response times across applications
- **Worked closely with field teams, clients, and stakeholders** to gather requirements, troubleshoot issues, and deliver solutions

MAJOR ASSIGNMENTS

NEXGEN (Highway Device Management Solution)

Project Overview:

Centralized highway control room software integrating multiple device types (cameras, VMS, ATCC, ECB, MET) with real-time status monitoring and interactive map visualization for highway operations management.

Technical Environment: .NET MVC, Leaflet.js, Bootstrap, ADO.NET, PostgreSQL, Chart.js, vis.js

Role and Responsibilities:

- **Architected integrated device management platform** by developing .NET MVC application that consolidates data from cameras, Variable Message Signs (VMS), Automatic Traffic Counter & Classifier (ATCC), Emergency Call Boxes (ECB), and Meteorological sensors into unified control room interface
- **Engineered device-specific microservices architecture** by creating dedicated background services for each device type, enabling real-time data collection and processing while maintaining system modularity and independent service scaling
- **Implemented real-time RTSP streaming integration** for highway camera feeds with live video display capabilities, providing control room operators immediate visual access to highway conditions and incident monitoring

- **Developed interactive mapping solution** using Leaflet.js with real-time device status indicators, enabling operators to visualize device locations, operational status, and data trends across entire highway network on a single dashboard
- **Built comprehensive status monitoring service** as dedicated background process for continuous device health tracking, reducing manual monitoring effort by 80% and enabling proactive maintenance through automated alert generation

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Consolidated Site Data Summary Solution

Project Overview:

Internal integration status tracking tool serving as communication bridge between field installation teams and development team, monitoring NEXGEN device integration progress across highway sites.

Technical Environment: .NET Core, ADO.NET, PostgreSQL, HTML, CSS, JavaScript

Role and Responsibilities:

- **Developed internal integration monitoring platform** using .NET Core to track device installation and integration status across multiple highway sites, providing real-time visibility into project deployment progress for cross-team coordination
- **Architected communication bridge system** connecting field installation teams with development team through centralized dashboard, eliminating information gaps and reducing project status inquiry time from hours to real-time updates
- **Implemented comprehensive device integration tracking** that monitors installation progress, identifies pending integrations, and provides detailed root cause analysis for delayed device deployments, improving project completion visibility
- **Built automated status aggregation service** that collects device status data from site-level status services and consolidates information at headquarters, enabling management oversight of multi-site deployment progress

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Cash Deposit System Enhancement (CDS)

Project Overview:

Maintained and enhanced existing cash flow management system for toll plaza operations, implementing client-requested modifications and performance optimizations.

Technical Environment: AngularJS, ASP.NET MVC, ADO.NET, Microsoft SQL Server, RDLC Reports

Role and Responsibilities:

- **Enhanced existing cash management system** by implementing client-requested features and modifications to improve toll plaza cash flow tracking and reporting capabilities based on evolving business requirements
- **Optimized database performance** through stored procedure enhancements and query optimization in MSSQL, improving system response times for daily cash reconciliation processes
- **Maintained system reliability** by troubleshooting issues, implementing bug fixes, and ensuring consistent uptime for critical cash flow operations across multiple toll plaza locations
- **Collaborated with clients** on requirement analysis and change requests, delivering timely enhancements while ensuring backward compatibility and data integrity

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Edge-Based ANPR System on Raspberry Pi

Project Overview:

Lightweight Automatic Number Plate Recognition system optimized for edge deployment, processing real-time RTSP streams with 95% accuracy on Indian license plates.

Technical Environment: Python, YOLO-NCNN, PaddleOCR, Flask, PostgreSQL, HTML/CSS/JavaScript, OpenCV, Raspberry Pi 5

Role and Responsibilities:

- **Engineered end-to-end AI pipeline** by collecting and annotating 5,000+ diverse license plate images, fine-tuning YOLO models, and optimizing inference using NCNN, achieving 95% recognition accuracy while maintaining 15 FPS processing speed on Raspberry Pi 5
- **Architected full-stack web application** with Flask backend and responsive frontend, enabling real-time plate visualization and reducing manual vehicle logging by 100% through automated database integration with PostgreSQL
- **Optimized model deployment** for resource-constrained hardware by implementing quantization techniques and memory management, reducing model size by 70% while maintaining accuracy and enabling deployment on devices with 1GB RAM
- **Designed robust error handling system** with confidence scoring and manual review workflows, achieving 99.8% system uptime and reducing false positives by 85% through intelligent filtering algorithms

EDUCATIONAL QUALIFICATION

Post Graduation Diploma in Advance Computing | Institute of Emerging Technology | 2022 | Percentage: 72.33%

Bachelor of Engineering (B.E.) – Mechanical Engineering | JSMP NTC, Pune Graduation Year: 2020 | CGPA: 7.59/10