

SAGAR PRADIPKUMAR JAIN

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SUMMARY

Senior Software Engineer with 9 years of experience, specializing in C++-based Computer Vision, real-time video analytics, & GStreamer pipeline engineering on Linux. Designed 55 ms latency CCTV analytics engine (C++/GStreamer/OpenCV) & delivered AWS Bedrock Agent PoC for speech/text insights. Strong in multithreading, memory management, performance optimization, & production-ready system architecture.

SKILLS

Programming: C++14/17, Python, SQL

Computer Vision: OpenCV 3/4, Tesseract, Image Processing

Media & Streaming: GStreamer, RTSP, Video Pipelines

System Design & Performance: Multithreading, Memory Mgmt, STL, Design Patterns, Optimization, Debugging

Cloud & Backend: AWS Bedrock (Agents, KB, Comprehend), FastAPI, gRPC, Protobuf

Tools & Build: Git, CMake, Eclipse CDT, Visual Studio

Databases: MySQL (C++ connector), DynamoDB (AWS SDK), JSON/XML

OS: Linux (Ubuntu), Windows

EXPERIENCE

Great Software Laboratory (GS Lab / Intellivision): Senior Software Engineer - Computer Vision (April 2024 - Present)

- *Project 1 — Real-Time CCTV Monitoring & Video Analytics*
(C++, GStreamer, OpenCV)
 - Achieved ~55 ms/frame real-time analytics latency by designing a C++ (GStreamer + OpenCV) multi-camera pipeline with thread-safe queues & memory-pool reuse.
 - Developed modular GStreamer pipelines (appsink/appsrc, gst_parse_launch) enabling scalable multi-camera RTSP processing.
 - Integrated FastAPI & gRPC micro-services for analytics event routing & MySQL metadata logging.
- *Project 2 — Agentic AI Assistant PoC using AWS Bedrock (AI + Cloud Integration)*
 - Delivered an Agentic AI Assistant PoC using AWS Bedrock Agents (KB + Comprehend), with embeddings stored in OpenSearch for semantic retrieval.
 - Integrated DynamoDB to persist meeting transcripts & KPI metadata for supervisory analytics dashboards.

- Added an open-source pipeline variant replacing AWS components with Janus WebRTC, OpenAI Whisper, & HuggingFace-based LLMs to enable vendor-neutral deployment.

Siemens Digital Industries Software: Software Engineer (November 2022 - March 2024)

- Developed console-based Teamcenter ITK cloning utility in C++ to automate product structure replication & reduce manual rework.
- Implemented transaction-safety mechanisms & session-level validations to ensure consistent multi-level BOM cloning.
- Enhanced data extraction & caching logic to improve cloning & search speed by 25%.

Dassault Systèmes (3DPLM): R&D Engineer (May 2018 - October 2022)

- Built a CATIA CAA RADE plug-in (C++) combining Hidden Markov Model classification & Genetic Algorithm optimization for automated geometry idealization prior to meshing.
- Designed a multi-parameter scoring model (orthogonality, aspect ratio, size continuity, clearance, radius, deformation magnitude) to quantify mesh readiness.
- Implemented background GA processing with CATIA API thread protection (mutex-based) to eliminate UI lag & ensure safe geometry updates.
- Reduced meshing time by 40% & poor-aspect-ratio elements by 65% across benchmark test parts.

Renishaw Metrology Systems Pvt. Ltd.: Associate Software Engineer (July 2016 - April 2018)

- Developed C++, OpenCV & Tesseract OCR pipeline to extract GD&T symbols & tolerances from 2D drawings (PDF).
- Achieved 90% symbol detection accuracy & 80% reduction in manual data-entry time over 100+ production drawings.
- Built template library of 15 standard symbols & rule-based grammar parser for feature frame reconstruction.
- Integrated JSON output with Renishaw MODUS CMM suite for 3D annotation visualization.
- Implemented image pre-processing (Canny edges, adaptive threshold, morphology) to enhance detection under noise.

EDUCATION

- College of Engineering, Pune (COEP): M.Tech Mechatronics (June 2014-May 2016)
- Government Engineering College, Aurangabad: B.Tech Computer Science & Engineering (June 2009-May 2013)

CERTIFICATIONS

- Certified SAFe® 6 Practitioner - Scaled Agile, Inc. | Dec 2023