Shriyansh Singh

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SUMMARY

Algorithms Engineer specializing in **image processing** and **computer vision** with expertise implementing **deep learning models** for defect detection using **C++** and **Python** in Linux environments.

PROFESSIONAL EXPERIENCE

Computer Vision Algorithm Engineer *April 2024 - Dec 2024*

Hyphenova AI *Los Angeles, CA*

- **Engineered** novel **image processing algorithms** for defect detection that achieved 97.8% accuracy, reducing false positives by 42% compared to existing methods
- **Implemented CNN-based anomaly detection models** using **TensorFlow** and optimized deployment with **C++** that accelerated inference speed by 3.5x on production hardware
- **Developed CUDA-accelerated** image analysis pipelines for high-resolution data processing that reduced computational latency by 68% while maintaining detection quality
- **Collaborated** with cross-functional teams to integrate machine learning solutions into existing inspection frameworks, producing comprehensive documentation for deployment workflows

Algorithm Development Specialist *May 2022 - Oct 2022*

Enterprise Business Technologies *Mumbai, India*

- **Designed** prototype **computer vision algorithms** in **MATLAB** and **Python** for industrial inspection systems that identified microscopic surface anomalies with 96% precision
- **Converted** algorithm prototypes to optimized **C++** implementations with precise memory management techniques that reduced runtime by 35% for deployment on embedded systems
- **Constructed** robust image preprocessing modules using advanced filtering techniques that enhanced feature extraction capabilities in low contrast and noisy environments
- **Formulated** technical specifications for algorithm performance requirements, coordinating with QA teams to develop comprehensive testing frameworks for validation

TECHNICAL PROJECTS

Deep Learning-Based Surface Inspection System | *TensorFlow, C++, CUDA, OpenCV, Linux* *Jan 2024 – Apr 2024*

- **Architected** an end-to-end defect detection system using **convolutional neural networks** that achieved 92% detection rate on sub-micron defects under variable lighting conditions
- **Optimized** model architecture through systematic hyperparameter tuning and **quantization techniques** that reduced model size by 76% while maintaining detection accuracy **Integrated CUDA kernels** for image preprocessing operations that accelerated the pipeline by 4.2x compared to CPU-only implementations, enabling real-time analysis

Multi-Scale Feature Extraction Algorithm | *C++, Python, MATLAB, Eigen, Linux* *Sep 2023 – Dec 2023*

Developed novel **multi-resolution analysis algorithms** that adaptively processed image features at various scales, improving detection accuracy by 38% for complex surface textures

- **Implemented** the algorithm in production-ready **C++** with optimized matrix operations using the **Eigen library** that achieved 5ms processing time per high-resolution image
- **Created** comprehensive test suite with automated validation across diverse image datasets, ensuring algorithm robustness across manufacturing variability

TECHNICAL SKILLS

Programming Languages: C++, **Python**, **MATLAB**, CUDA, OpenCL, GLSL, Shell Script
Computer Vision & ML: OpenCV, **TensorFlow**, PyTorch, **scikit-image**, scikit-learn, Pillow, NumPy
Optimization: CUDA Programming, **Parallel Computing**, **Linear/Nonlinear Optimization**, Memory Management
Image Processing: Feature Extraction, **Object Detection**, **Segmentation**, **Texture Analysis**, Signal Processing
Development Tools: Linux, Git, CMake, Docker, Visual Studio, Jupyter, Weights & Biases, NumPy, Pandas
Algorithm Design: Computational Imaging, **Defect Detection**, **Performance Optimization**, Data Structures

EDUCATION

Indiana University Bloomington Aug 2023 – May 2025

Master of Science in Data Science *Indiana, United States*

- Specialized Focus: Computer Vision, Image Processing, Machine Learning, Computational Algorithms
- GPA: 3.8/4.0