Hitesh Basantani

Portland, OR (Open to Relocation) · (814) 880-4925 · Hab186@gmail.com · linkedin.com/in/hiteshbasantani

SUMMARY

Experienced Engineering Leader and Data Scientist with over 15 years of expertise in hardware reliability, failure analysis, and predictive modeling for high-volume manufacturing environments, specializing in yield optimization. Proven track record in reducing failure rates and improving product quality through advanced statistical analysis and machine learning techniques. Extensive experience in cross-functional collaboration to optimize high-precision manufacturing processes. **Currently pursuing a Master's in Data Science at UC Berkeley** to deepen skills in data-driven approaches for enhancing hardware reliability.

CORE COMPETENCIES

- **Hardware Reliability:** Module Testing, Device Physics, Materials Science
- **Failure Analysis & Root Cause Techniques:** Outlier Detection, Time Series Analysis, SEM-EDX, Failure Mode and Effects Analysis (FMEA)
- **Data Science & Statistical Research:** Advanced Statistical Modeling, Machine Learning (Python, R, Scikit-learn, TensorFlow), Predictive Analytics
- **Engineering Management & Program Leadership:** Cross-Functional Team Leadership, Scope & Risk Management, Resource Planning, Hardware/Software Integration

WORK EXPERIENCE

Intel Corporation   **2014 - Present**
Staff Yield and Technology Development Engineer - Portland, OR   2018 - Present

- Developed and deployed end-to-end predictive neural network and XGBoost models using Python and PyTorch, **reducing rejects by 90% and saving $3.5M annually**. Applied machine learning techniques to predict and prevent defects in modules, improving critical dimension (CD) accuracy and ensuring compliance with strict quality standards. Collaborated with automation and IT teams over a two-year project to fully integrate these solutions into production systems, enhancing process efficiency across all reticles.

- Utilized root cause analysis techniques such as SEM and EDX for failure identification and resolution. Implemented machine learning models to predict and eliminate critical process failures, including module defects, **contributing to $3 million in cumulative savings and an 80% yield improvement.** Collaborated with cross-functional teams to successfully deploy the model.

- Led a cross-functional task force of 15 engineers, including dry etch, beam, and automation engineers, to resolve a critical module mismatch issue impacting technology performance in a $1.3B facility. Successfully restored full operational capacity and **improved throughput by 12%** and restored full operational capacity within 4.5 months.

- Authored and standardized process documentation for mask production, coordinating 125 steps across two facilities. **Reduced integration time by 30%** through optimization of material transfer, quality control, and compliance procedures.

- Managed a team of 8 engineers during a manager's medical leave, meeting yield targets for two consecutive quarters and maintaining production quality across all product lines. Supported team goals while fulfilling technical duties.

- Chaired two inter-module teams (IMTs) focused on pattern placement and CD improvement projects, achieving **a 0.3% yield improvement efficiency**. Led cross-departmental initiatives to ensure product quality and operational efficiency.

Process Technology Development Engineer (Module Reliability) - Portland, OR   2014 - 2018

- Developed advanced statistical models to optimize module performance and hardware reliability, **increasing toolset uptime by 15%** - equivalent to the cost of a $15M tool. Enhanced process consistency for high-precision modules.
    - Collaborated with the vendor to integrate data-driven adjustments into tool performance monitoring, reducing the need for frequent recalibrations and **decreasing response times by 15%**.

- Led cross-functional technical reviews as Chair of a module engineering committee, introducing new statistical control methods for module testing, **resulting in a 5% reduction in defect rates and improved hardware reliability**. Coordinated efforts across multiple teams to drive process improvements and ensure consistent product quality.
    - Worked with stakeholders from engineering and quality control to identify and resolve key issues affecting product yield, leading to sustainable quality improvements.

EDUCATION and AWARDS

University of California, Berkeley   **Berkeley, CA**
Master of Information and Data Science (Expected 2025)

The Pennsylvania State University, University Park   **University Park, PA**
Ph.D., Engineering Science and Mechanics
M.Sc., Engineering Science and Mechanics
B.Sc., Engineering Science and Mechanics

Department and Division Awards:
Award for Machine Learning Innovations in Critical Dimension Uniformity (Intel): Recognized for developing advanced machine learning models that significantly improved Critical Dimension Uniformity, enabling performance enhancements for Intel's next-generation wafer processing technology.

Award for Enhancing Tool Capability and Saving $15M in Capital Expenditure (Intel): For optimizing existing toolsets to increase throughput (TPT), which eliminated the need for purchasing an additional $15M tool, resulting in significant cost savings for Intel.

Outstanding Contribution Award for Improving Photomask Reliability (Intel): Received for making substantial contributions to improving the reliability of photomasks in production, which prevented a large number of Intel wafers from being scrapped, ensuring high production quality and efficiency for the life of the process.

TECHNICAL SKILLS & PROFICIENCIES

Programming & Data Science Tools Proficiency: Python, R, SQL, TensorFlow, Scikit-learn, PyTorch, Docker, Git, Poetry, XGBoost

Programming & Data Science Tools Familiarity: AWS, Google Cloud, SQL, Kubernetes, PySpark, Hadoop

Product Analytics & Experimentation: A/B Testing, Experimentation Design, User Behavior Analysis

Project Management & Leadership: Agile Methodologies, Jira, MS Project, Cross-Functional Team Leadership