Aksh Patel

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SUMMARY

Industrial & Manufacturing Engineer with strong NPI experience in SMT/PCBA production, process optimization, DOE, line balancing, and data-driven decision-making. Skilled in Python/Minitab/JMP data analysis, real-time Power BI dashboarding, Lean Six Sigma, capacity modeling, automation, and advanced CPU BGA development. Proven ability to improve FPY, OEE, throughput, and overall line performance in fast-paced manufacturing environments.

PROFESSIONAL EXPERIENCE

Foxconn Industrial Internet, USA – WISE, SUNY Binghamton. *Oct 2024 – Present*

Manufacturing Process Engineer **-** *Graduate Research Assistant* | Mount Pleasant, WI

- Led NPI for **3 Google server assemblies** for data-center platforms, establishing standardized processes, PFMEAs, and control plans that enabled **91% FPY during ramp-up.**
- Improved **line utilization by 3.2%** and **eliminated 432 hours of engineering workload annually** by developing automated **Power BI OEE and downtime dashboards** across 6 SMT/PCBA lines.
- Increased daily motherboard throughput by **42 units, unlocking $178.5K in daily production capacity** potential using capacity planning, takt-time analysis, line balancing, and a **self-built discrete-event simulation model.**
- Led comprehensive **DOE, tolerance analysis, SPC, MSA, and CpK/CmK studies** to quantify equipment capability, eliminate process variation, and secure full NPI validation for high-volume ramp-up.
- Developed BGA heatmap inspection, stencil optimization, and warpage-mitigation frameworks supporting **CPU BGA process development for NPI.**
- Applied **Lean Six Sigma, DMAIC, and 8D/5-Why RCA** to reduce defects, improve changeover consistency, and drive continuous improvement in high-volume production.

Oil and Natural Gas Corporation *June 2023 – July 2023*

Mechanical Engineer - Summer Internship Trainee | Ahmedabad, India

- Analyzed SCADA data to **detect performance anomalies** and supported predictive maintenance, improving response time by **1.2 %** across field sites.
- Assisted in preventive-maintenance planning and **cross-team coordination** to maintain the uptime of distributed equipment.

EDUCATION

M.S., Industrial and Systems Engineering, SUNY Binghamton, Aug 2024-Dec 2025 | Cumulative GPA: **3.62/4.00**

B.S., Mechanical Engineering, Nirma University, 2020-2024 | Cumulative GPA: **7.61/10.00**

SKILLS

Manufacturing Process & Quality:	SMT, PTH, DFM/DFA, BOM, DOE, SPC, MSA, Thermal Profiling, PFMEA, RCA (5-Why, 8D, Ishikawa), 5S, Lean Manufacturing, DMAIC
Modeling & Simulation:	SimPy, FlexSim, Simio, MATLAB Simulink, Capacity Planning & Modeling, Scenario Analysis, Queuing Theory
Data Visualization & Statistical Tools:	Power BI, Minitab, JMP
CAD/CAE:	Vayo DFM, Vayo Stencil, SolidWorks, Autodesk, AutoCAD, CAM350
Programming Languages:	Python, SQL, RStudio
Automation & Integration Tools:	Power Automate, Integromat (Make), Zapier
Libraries & Frameworks:	Pandas, NumPy, Matplotlib, Plotly, Folium, GeoPandas, Gradio, Streamlit
General Productivity Tools:	MS Office (Excel, Word), Google Workspace, Google Colab, LaTeX, Lucidchart
Certifications:	Lean Six Sigma Green Belt
Professional Skills:	Communication, Collaboration, Time Management, Problem-Solving, Business Acumen, Leadership

PROJECTS & RESEARCH EXPERIENCE

- **Advanced CPU BGA process development for New Product Introduction in Smart Electronics Manufacturing (M.S. Thesis)**
- **CPU Solder Joint Diameter Inspection System -** Created a Python-based automated AI-driven BGA heatmap inspection system used by Google during the NPI phase to auto-detect BGA solder defects during thermal profiling and tolerance validation to ensure reflow quality and reliability.
- **Advanced Solar Air Heater Thermal Optimization-** Optimized solar air heater performance through experimental surface roughness analysis, achieving up to 13.3% higher heat transfer and 7.0% improved thermo-hydraulic efficiency.
- **Reliability Enhancement of Multibranched Heat Pipe Cooling Systems-** Enhanced multibranched heat pipe reliability by analyzing condenser cooling water effects on dry-out, identifying operating conditions that improved efficiency by 1.6%.

PUBLICATIONS

- **Aksh Patel**, Dr. Santos (2025). "*Development of a heatmap inspection system to identify potential warpage-induced defects*", SMTA International Conference.