NICK WISWELL

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PROFILE

6 years of experience with algorithm development and software for real-time process control systems. Experience with collection and analysis of large datasets from industrial systems to improve operational performance. Statistics and optimization background.

EMPLOYMENT

Applied Materials – Algorithm Developer   **2015 - Present**

CMP (Chemical-Mechanical Polishing) Process Control Group

- Invented new methods for interpretation of broadband reflectometry spectra and developed software validation for these techniques; new capabilities directly enabled over $10M in sales
- Assisted with software implementation of these algorithms to achieve real-time process control
- Developed complex simulations to determine optimal configuration of sensors and data collection
- Investigated the feasibility of various new sensors to improve process outcomes, and subsequently led development of a novel acoustic emission control system
- Frequently engaged with analysis of gigabyte or terabyte-scale datasets
- Delivered data visualizations and recommendations to drive organizational decisions
- Contributed to Big Data / AI initiative to facilitate distributed in-fab data warehousing and machine learning to enable real-time inference on spectral data

Applied Materials – Process Engineer   **April 2014 - 2015**

CMP Disruptive Technology Group

- Developed algorithms for laser positional control to protect critical system components and obtain the optimal dose and distribution in a rotating reference frame

PROJECTS

- Independently designed, deployed, and administered a 300-node bare-metal cluster using IPMI + iPXE for RancherOS diskless boot, Docker Swarm for workload orchestration and custom Python/Bash tooling with Prometheus/Grafana for management

PATENTS

Machine Vision as Input to a CMP Process Control Algorithm	#20200094370
Polishing System with Capacitive Shear Sensor	#20200070306
Training Spectrum Generation for Machine Learning System for Spectrographic Monitoring	#20200005139
Polishing Fluid Additive Concentration Measurement Apparatus and Methods Related Thereto	#20190275632
Monitoring of Vibrations During Chemical Mechanical Polishing	#20190283204

EDUCATION

California Polytechnic State University, San Luis Obispo

M.S. Engineering, Concentration in **Materials Engineering** (2014)
Master's Thesis: *Design and Fabrication of Electrostatically Actuated Serpentine-Hinged Nickel-Phosphorous Micromirror Devices*

B.S. Materials Engineering, Minor in Physics (2012)

TOOLS

Python	**Matplotlib**	**SciPy**	**Bash**
NumPy	**C / Cython**	**Pandas**	**JMP**