

NICK WISWELL

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PROFILE

8 years of experience with algorithms and software for real-time process control systems. Experience with collection and analysis of large datasets from industrial systems to improve operational controls.

EMPLOYMENT

Applied Materials – Algorithm Developer, Member of Technical Staff 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
- Created software implementations of these algorithms to achieve real-time process control
- Developed simulations to determine optimal sensor configuration and data collection strategy
- 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
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EDUCATION

Georgia Institute of Technology

M.S. Computer Science (2021 - Expected 2024)

California Polytechnic State University, San Luis Obispo

M.S. Engineering, Concentration in **Materials Engineering** (2012-2014)

Master's Thesis: *Design and Fabrication of Electrostatically Actuated Serpentine-Hinged Nickel-Phosphorous Micromirror Devices*

B.S. Materials Engineering, Minor in Physics (2008-2012)

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
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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
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TOOLS

Python
NumPy

C / Cython
SciPy

Linux
Bash

GDB
JMP