
Louis Antoine

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WWW: <https://alovladi007.github.io/louis-antoine-portfolio/index.html> |

WWW: <https://github.com/alovladi007?tab=repositories>

Summary

Early career Electrical Engineer applying for Vacancy ID 204608 in the State of New York, with hands-on integration, test experience in precision electro-optical equipment (ASML), strong documentation discipline (ICDs, test procedures), and data-driven validation (Python/MATLAB). Comfortable working from requirements, design, verification/validation (V&V) with configuration control and safety in mind. Looking to support System Engineer I duties across requirements, interface definition, integration, and testing on complex platforms.

Skilled in tool qualification, recipe optimization, chamber matching, and preventative maintenance across leading platforms (ASML, AMAT). Proficient in SPC, FDC, DOE, and root cause analysis.

Skills

- Systems engineering: requirements decomposition, traceability, CONOPS/use cases, ICDs, interface control, risk and issues, trade studies, verification planning (VCRM), V&V execution, thin film deposition process development (PVD, CVD), crystal growth, dopant diffusion, and oxidation kinetics
- Image processing and analysis (MATLAB, Python, OpenCV, scikit-image)
- Photolithography process development and optimization
- EUV / DUV lithography tool operation and calibration
- Tool qualification and characterization (install, baseline, spec check, system readiness)
- Optical System Design and Alignment.
- Image acquisition and sensor operation
- Optical Proximity Correction (OPC) and Resolution Enhancement Techniques (RET).
- Reticle and pellicle management (binary masks, phase shift masks (PSM))
- Metrology and data analysis (line edge roughness (LER), swing curves, focus-exposure data)
- SPC (Statistical Process Control): control charts, Cp/Cpk
- Yield enhancement (DOE, FMEA, 5 Whys, and Pareto analysis)
- Facilities and subsystem knowledge (familiarity with vacuum systems, gas delivery MFCs, cooling loops, chemical/vapor lines, and electrical diagnostics, oscilloscopes, multimeters)
- Recipe parameters
- Chamber chemistry and kinetics
- Temperature/pressure regimes
- Gas delivery systems
- Tool constraints and failure modes: subsystems: vacuum, RF/plasma, motion control, thermal systems
- Process monitoring and metrology (ellipsometry, XRR/XRD, profilometry)
- Semiconductor electrical testing correlations (I-V, C-V, mobility, R sheet)
- Defect inspection and metrology (CD-SEM, overlay metrology, AFM, and scatterometry)
- CMP, wet etch chemistry, and process development documentation and compliance
- Cleanroom wet bench operation and safety
- Documentation and compliance
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Experience

STUDENT EQUIPMENT DESIGN & TEST SPECIALIST | 10/2021 - 04/2024

University of Connecticut - Storrs, CT

- Modeling and Evaluation of Gallium Nitride (GaN)-Based Power Devices for High-Frequency Switching Applications
- Silicon Carbide (SiC): Developed detailed models of SiC MOSFETs to evaluate their performance in harsh, high voltage environments.
- Monte Carlo Simulation vs. Double Gaussian Model: Accurate modeling of electron scattering and energy deposition in EUV masks, outperforming analytical proximity correction models in complex 3D absorber structures.
- Supported semiconductor and optoelectronics labs, assisted with precision measurements, front-end, and back-end (interconnect, dual Damascene) processing technologies.
- lithography (Optical Pattern Formation, Photoresists, Wafer Steppers, and Scanners (see ASML Work Experience), Overlay, Overlay, Immersion Lithography and Limits, Extreme Ultraviolet Lithography).
- Etching technologies and chemical-mechanical polishing (Wet Etching, Dry or Plasma Etching, Atomic Layer Etching). Etchback process using photoresist and spin on glass (SOP), familiarity with Applied Materials Reflection CMP machine, A.
- Deposition technologies (CVD, ELO, LPCVD, MOCVD, PECVD, ALD, and molecular beam epitaxy (MBE)).
- Provided guidance to undergraduate students working on independent projects related to the main research focus.

OPTICAL METROLOGY EQUIPMENT OPERATOR | 05/2021 - 06/2023

Asml Us - Wilton, CT

- Used standardized tools and electronic equipment (torque wrenches, electric and pneumatic screwdrivers, ball drivers, lifting equipment, computers, oscilloscopes, voltage and current probes, multimeters, micrometers, and calipers) to assemble, install, remove, or perform testing and troubleshooting on an optical metrology system. Used optical fibers, spectrometers, and power meters to obtain and analyze results.
- Experienced with electro-optical and/or optical-mechanical systems, as well as imaging and testing. Familiarity with the YieldStar 375 F, 380 G, and 1385 Optical Metrology System for process monitoring and control, as well as for lithography system stability and matching. Performed sub-system assembly, optical alignment, functional testing, equipment calibration, station setup, and process development support.
- Sensor alignment, UIA alignment, focus branch, Z-stage installation, pre-qualifications, Pupil Branch, Alignment Branch, Reference Branch, Cables, and Covers, final qualifications.
- Final Qualifications: Measured sensor performance; calibrations, alignment of branch optics, objective lens performance, and diffraction-based overlay measurements.
- Assisted with making recommended changes in design, methods, and procedures to enhance product quality.
- Developed spreadsheets using Excel to track key performance indicators.
- Worked in a clean room environment, and adhered to strict safety procedures, utilizing PPE, and embracing ASML 5S+1 requirements. Wore coveralls, hoods, booties, safety glasses, and gloves for the entire duration of 12-hour night shifts.
- Performed root cause analysis on production issues, developed corrective actions with the SAP system, Opti Angle, YieldStar software, and monitored results.
- Participated in cross-functional teams with manufacturing, quality, and procurement departments.

UNDERGRADUATE STUDENT RESEARCH ASSISTANT | 05/2020 - 08/2020

University of Connecticut - Storrs, CT

- Utilized EIT for slow light and quantum memory demonstrations in vapor cells and cold atom ensembles.
- Modeled Λ -type three-level systems using density matrix formalism to simulate optical susceptibility under varying laser detuning and intensity.
- Developed laser locking and modulation systems for EIT experiments using acousto-optic modulators (AOMs), and electro-optic modulators (EOMs).

PATIENT ADMINISTRATION SPECIALIST | 01/2016 - 01/2018

United States Army - Fort Stewart, GA

- Utilized the computerized Resource and Patient Management System (RPMS) and Electronic Health Record (EHR) system to update patient records, transmit prescriptions, and transfer files.

- Maintained strict patient data procedures to comply with HIPAA laws, and prevent information breaches.
- Hands on experience using MHS GENESIS, the Department of Defense's enterprise electronic health record system. In this role.
- Supported patient registration, records management, data accuracy, and system navigation within a highly regulated healthcare IT environment.

CASHIER | 10/2011 - 12/2015

Walmart - Norwalk, Connecticut

- Processed customer transactions accurately and efficiently at checkout.
- Assisted customers with product inquiries and provided excellent service.

Education and Training

University of Connecticut - Storrs, CT | Master of Science

Electrical Engineering, 05/2025

University of Connecticut - Storrs, CT | Bachelor of Science

Physics

CT State Community College Housatonic - Bridgeport | Associate of Science

Engineering Science

ADDITIONAL EXPERIENCE

- **Professional Driver (Uber/Lyft)**
Storrs, CT (While completing my undergraduate degree)

Certifications

- Six Sigma Green Belt
- Google IT Automation with Python
- Google Advanced Data Analytics Professional Certificate
- MATLAB Programming for Engineers and Scientists Specialization