Nicholas R. Hoffmann

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Test Engineering Leader

Production Test Transformation | NPI & Factory Deployment| Data-Driven Manufacturing

Collaborative engineering leader who aligns technical execution with business outcomes in yield, quality, and reliability. Extensive background in production testing, NPI, and efficient factory deployment for industrial IoT and complex electromechanical products. Improves results through standardized test data, automated sequences, and strategic station designs that scale across manufacturing.

Innovation | Automated Test Systems | Prototyping | Test Strategy and Architecture | Data Standardization | Manufacturing Oversight and Yield Optimization | Risk Mitigation |Unit Validation | Fixture and Station Design | Root Cause Analysis | NPI Execution | Factory Deployment | Data & Analytics | Process Engineering | Station Reliability and Maintainability | SOPs and Work Instructions | Quality and Compliance | Hardware Integration | Cross-functional Collaboration | Continuous Improvement | Mentorship | Team Development

Professional Experience

Telular, Chicago, IL **May 2022 – January 2026**

Test Engineer

AMETEK business unit delivering industrial IoT, telematics, security, and automation solutions globally.

Designed automated production test systems and standardized test data to enable smooth manufacturing deployment. Established factory tests and resolved production issues to support reliable ramp-up.

- Transformed production testing: reduced test-result data volume 70%, standardized result schemas, and raised first-pass yield to 85% using real-time monitoring and iterative, data-driven changes.
- Led end-to-end NPI test readiness: developed automated test sequences, executed golden-unit validation, deployed fixtures and stations, and ran controlled releases to mitigate ramp-up risk and shorten time to target yield.
- Engineered a 3-in-1 connector adapter from concept to factory rollout, improving ergonomics, cutting handling time, and increasing throughput with fewer errors.
- Upgraded fixtures and revised procedures to meet new specifications.
- Strengthened station reliability and maintainability, authoring work instructions to institutionalize fixes.

Adarza BioSystems, St. Louis, MO **May 2019 – August 2019**

Engineering Intern

Startup developing a label-free platform for simultaneous detection of hundreds of analytes in a single drop, supporting diagnostics and proteomics research.

Pioneered leakproof adhesive processes for biomedical chip assembly. Engineered an automated robotic workstation from concept to production readiness.

- Constructed a biomedical chip assembly platform ready for deployment; completed full I/O validation and motion interlock checks to confirm system functionality.
- Designed leakproof chip assemblies using laser-cut biomedical-grade adhesive, verified with multiple microscopy workflows.
- Incorporated a multi-pump vacuum and pressure system, calibrated and refined the assembly to achieve optimal performance.
- Introduced integrated safety measures to enhance operational reliability.

Research Projects

Northwestern University, Evanston, IL **August 2020 – March 2022**
Graduate Research Assistant
Hybrid prosthetic pump to enhance continuous suspension pressure and improve patient quality of life.
Designed and assessed a hybrid vacuum pump invention for transfemoral prostheses. Translated clinical needs into specifications and research protocols, modeled performance, and iteratively improved prototype.

- Evaluated a mechanical-electrical suspension pump, setting parameters based on performance analysis.
- Translated clinical needs into hardware specifications, defined trade-offs, and identified key failure modes.
- Modeled system behavior across various configurations and automated analysis; quantified structural margins and provided concise stakeholder summaries.
- Led a human participant study following formal protocols to protect participants and guarantee data integrity.

Northern Illinois University, DeKalb, IL **August 2019 – May 2020**
Lead Electrical Engineer
Upper limb exoskeleton for use outside of clinical settings to supplement stroke rehabilitation.
Engineered a comprehensive electrical system for an upper limb exoskeleton. Coordinated with mechanical and software leads to ensure reliable control and safe operation.

- Directed electrical engineering, aligning control strategy across cross-functional teams.
- Met sub-50 millisecond E-stop response time with preserved encoder state for quick restart.
- Enhanced system safety with isolated power domains and unified state handling; verified through bench testing to ensure predictable behavior across operating states.

Northern Illinois University, DeKalb, IL **July 2016 – March 2017**
Lead Engineer and Biologist
Nanoparticle creation and uptake in cancer cells to support targeted drug delivery.
Stabilized fluorescent nanoparticles and built comprehensive lab workflows to enable reliable cellular uptake studies. Initiated and led the first formal collaboration between electrical engineering and biology.

- Established a dye-loading evaluation plan, confirmed intracellular fluorescence, and set dispersion acceptance criteria to ensure quality and consistency.
- Documented SOPs to deliver dependable outcomes across synthesis, growth, and purification.
- Recruited and trained students to expand project capacity.

Northern Illinois University, DeKalb, IL **August 2015 – May 2016**
Research Assistant
Cancer treatment modeling to maximize tumor dose and minimize healthy tissue damage.
Simulated, measured, and assessed multiple proton imaging methods to improve path reconstruction and image quality. Collaborated across institutions to advance cancer treatment.

- Implemented tracking and residual energy measurement to compare dose distributions.
- Partnered with Fermilab for proton CT detector development, validation, and clinical translation.
- Analyzed proton trajectories and calculated reconstruction error to guide improvements.
- Assessed clinical and non-medical applications and presented findings.

Education

Master of Science (M.S.), Biomedical Engineering
Northwestern University, Evanston, IL

Bachelor of Science (B.S.), Electrical Engineering
Minor, Applied Mathematics
Emphasis, Biomedical Engineering
Northern Illinois University, DeKalb, IL