

David J. Haruch

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Education

Villanova University

Master of Sciences in Electrical Engineering

GPA: 4.00

VILLANOVA, PA

January 2024 – Expected June 2027

Drexel University

Master and Bachelor of Sciences in Mechanical Engineering

GPA: 3.95

PHILADELPHIA, PA

September 2017 – June 2022

MS Thesis: Ball Bonder Rear Y Slide Noise and Vibration Reduction with Tuned Mass Dampers

Employment Experience

KLA Corporation

MILPITAS, CA

Mechanical Design Engineer, Central Eng Stage Group

May 2024 – Present

- Design, analysis, testing of air/mechanical bearing XYZ θ stage for next generation DUV optical inspection machine to meet 7 nanometer 6σ autofocus error and improved throughput specs while minimizing cost, risk, and time to market

Kulicke and Soffa Industries, Inc.

FORT WASHINGTON, PA

Senior Engineer 1

October 2023 – April 2024

- Tuning of a gain scheduled PI current controller to achieve $>3\text{kHz}$ closed loop bandwidth for a wire bonder iron core linear motor servo drive. Developed novel experiment techniques to tune at high current where behavior is nonlinear from magnetic saturation

Advanced Engineer, Ball Bonder Mechanical

June 2022 – September 2023

- Design of custom high precision linear needle bearings and recirculating ball bearings to meet improved mass, bond placement accuracy ($1.5\mu\text{m } 3\sigma$), and stiffness targets over off the shelf options for a wire bonder XY table
- Design, FEA, and testing of a Y axis alloy extrusion to reduce moving mass by 9.4%, increase servo bandwidth, reduce machine footprint by 4.2%, reduce COGS by \$10, and minimize misalignment of glued needle bearing races with an integrated flexure on next generation wire bonder XY table

Engineering Intern

April 2021 – May 2022

- Created a nonlinear spring/mass/damper MATLAB model to select optimal design parameters of a reaction force cancellation mechanism for a high speed XY table. Validated simulation with customer applications
- Conducted modal testing on XY table components to investigate change in natural frequencies and damping from changes in table position, temperature change, and bearing wear

Specialized Bicycle Components, Inc.

MORGAN HILL, CA

Engineering Intern

January 2020 – July 2020

- Developed a streamlined system of accelerometers, mounts, and supporting software for use with Specialized's in-house, bike-specific datalogger system
 - Investigated impact of material damping and stiffness on mountain bike handlebars with field and lab tests
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Skills

Machine Shop: CNC Mill/Lathe, Manual Mill/Lathe, MasterCAM, TIG Welder

Software: SolidWorks, Siemens NX, NX NASTRAN, TeamCenter, ANSYS, PTC Creo/ProE, AutoCAD, Agile PLM, Fusion 360, ImageJ, LabVIEW, Git, Bitbucket, LaTeX, FEMM

Programming Languages: MATLAB, Python, JavaScript

Activities

Drexel Formula SAE (vehicle engineering design competition)

PHILADELPHIA, PA

Club President

September 2019 – June 2021

- Designed '22 vehicle suspension using self developed MATLAB nonlinear tire & vehicle models and FEA. Fabricated components with CNC/manual mill/lathes. Placed 15/45 at national competition
- Led development of 2000+ part Solidworks CAD model. Drew 3 view drawings. Budgeted \$120,000+ over 3 years for vehicle construction, testing, and travel