

Natzem A. Lima

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Education

Wyant College of Optical Sciences, University of Arizona

PHD STUDENT IN OPTICAL SCIENCES, CONCENTRATION IN OPTICAL ENGINEERING

Tucson, AZ

Aug 2019 →

- Graduate Coursework | Electricity & Magnetism, Linear Systems & Fourier Transforms, Geometrical Optics, Interference & Diffraction, Optical Physics & Lasers, Optical Testing, Lens Design, Radiometry of Sources & Detectors

MIT (Massachusetts Institute of Technology)

B.S. IN MECHANICAL ENGINEERING | GPA 4.4/5

Cambridge, MA

Aug 2012 - May 2016

Experience

Imaging and Applied Optics Lab | Dr. Rongguang Liang

GRADUATE RESEARCHER

Tucson, AZ

Dec 2019 - Present

- Produce novel optical solutions, including concept generation, system design, lens design, optics fabrication, system integration, testing, and evaluation.
- Develop ultra-precision on-machine metrology systems for advanced manufacturing, like multiple wavelength interferometry, vertical scanning interferometry, and polarized Mirau interferometry.

Fives Lund LLC.

ELECTRICAL AND CONTROLS ENGINEER, FORMER MECHANICAL ENGINEER

Seattle, WA

Jul. 2016 - Jul. 2019

- Developed, engineered, tested, programmed, and integrated a pressure control fluidic system for Oligonucleotide synthesis.
- Engineered an automated glass fibre tape lay up end-effector to be integrated with a 7-axis KUKA robot.
- Designed, tested, and commissioned non destructive semi-automated carbon fibre inspection systems for the Boeing 777X program that use ultrasonic techniques like through transmission (TTU) and pulse echo (PE).

Medical Device Design | MIT Department of Mechanical Engineering

UNDERGRADUATE RESEARCHER | PROFESSORS ALEXANDER SLOCUM AND NEVAN HANUMARA

Cambridge, MA

Aug. 2015 - Jul. 2016

- Developed and engineered a novel, low frequency ultrasonic surgical wound debridement and biofilm removal tool for use in orthopedic surgical sites.
- Collaborated with an orthopedic trauma surgeon to develop the functional requirements of the device and to develop the test methodologies to validate efficacy.

Elements of Mechanical Design | MIT Department of Mechanical Engineering

SYSTEMS MODELING AND FABRICATION LEAD | PROFESSOR MARTIN CULPEPPER

Cambridge, MA

Feb. 2015 - May. 2015

- Designed, built, and tested a precision, manual desktop lathe to machine brass and aluminum stock.
- Developed a homogeneous transformation matrix (HTM) model and stiffness model to drive design decisions for bearing, lead screw, and guide rail selection which ensured the error budget of 50 microns wasn't exceeded.
- Awarded the best performing lathe among 6 undergraduate teams.

Design and Manufacture II | MIT Department of Mechanical Engineering

TEAM LEADER | PROFESSOR JOHN HART

Cambridge, MA

Aug. 2014 - Dec. 2014

- Designed a Mike Wazowski themed yoyo and fabricated the injection moulds necessary for the production of 50 yoyos.
- Optimized production process parameters for injection moulding and thermoforming to meet part design tolerances.
- Awarded best mechanical design among 12 undergraduate teams.

Community Outreach and Honors

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| 2020 → | Outreach Demo Presentations , Wyant College of Optical Sciences | Tucson, AZ |
| 2019-2020 | Friends of Tucson Optics (FoTO) Scholarships in Optical Sciences , John Hayes and Jane Quale | Tucson, AZ |
| 2014-2016 | Committee Member , MIT First Generation Program | Cambridge, MA |
| 2012-2014 | JV Inventeams Engineering Content Developer , Lemelson MIT | Cambridge, MA |
| 2012-2013 | Fellowship Recipient , MIT PSC | Cambridge, MA |
| 2011 | Director's Award , Minority Introduction to Engineering and Science | Cambridge, MA |

Skills

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| Software: | AutoCAD Electrical, CodeV, MasterCAM, MathCAD, MATLAB Scripting (novice), OMAX Intelli-MAX, Rhinoceros, Rockwell Automation PLCs, OpticsStudio (Intermediate) and SolidWorks (Simulation, FEA, OpticsBuilder). |
| Hardware: | 3D FDM printing, fluidics, laser cutting, lathe (manual & CNC), milling (manual & CNC), optical alignment, rapid prototyping, thermoforming, and waterjet cutting. |
| Interests: | Cooking, Scandinavian folk dancing, swimming, and woodworking. |