

Arya B. Nair

(754) 213-5419 | abhad003@fiu.edu | Lauderhill, Florida 33351 | US Citizen | [LinkedIn](#)

EDUCATION

- Stanford University- Stanford, CA
Master of Science in Mechanical Engineering **Started on: March 2026**
- Florida International University - Miami, FL
Bachelor of Science in Mechanical Engineering | Magna Cum Laude | GPA: 3.71/4.00 **Graduated on: Aug. 2025**
- Harvard Business School- Boston, MA
Summer Venture Management Program **Jun. 2025**

SKILLS

Technical Skills: SolidWorks, Origin, MATLAB, NX CAD, NX CAM, Microsoft Office365 (MS Excel, MS Project, MS PowerPoint, MS OneNote), Python, FIIX, TipsQA, TipSFE, CostPoint, CREO

Equipment Proficiency: Nano indenter, Scratch Tester, Profilometer, Tensile Tester, Tribometer, 3D Printer, Ion chromatographer, Cold-Spray, Bandsaw, Milling Machine, Grinding Machine, Drill Press, Impact tester, CNC Machining, Torsion tester

EMPLOYMENT HISTORY

Work Experience and Research Experience

● Manufacturing Engineering

Boeing Defense, Space & Security – Smithfield, Pennsylvania

Oct. 2025 – Present

- Gathered and defined production requirements for multiple electrical and electronic manufacturing programs, ensuring alignment with customer specifications and engineering standards.
- Developed comprehensive production documentation, including detailed step-by-step work instructions, visual aids, and production routings derived from both 2D and 3D model-based design packages.
- Supported design reviews, analyses, simulations, and component/system testing to guarantee that all products meet or exceed performance, reliability, and quality expectations.
- Collaborated with cross-functional teams to troubleshoot and resolve production inconsistencies, optimizing processes for efficiency and repeatability.
- Actively contributed to new business development efforts, leveraging technical expertise to support proposals, process planning, and customer engagement initiatives.

● Manufacturing Engineering Intern

Dover Corporation – Hill Phoenix Division, Virginia

Jun. 2025 – Aug. 2025

- Contributed to the manufacturing of commercial refrigeration systems from raw aluminum sheets to final products, including structural assembly, foam panel injection, painting, and door/canopy installation.
- Assisted technicians and documented maintenance work instructions for key equipment and processes to support knowledge transfer and operational efficiency with CNC machinery such as Amada Vipros and Cincinnati AF, PF, and MF models
- Applied lean manufacturing principles to analyze and redesign workflow layouts aimed at maximizing throughput and minimizing production waste.

● Capstone Researcher – Boeing & FIU Collaboration

Florida International University, Miami, FL

Sep. 2024 – Apr. 2025

- Designed and manufactured cold spray test samples using SolidWorks and various manufacturing tools (Knee mill, Bandsaw) to replicate tribological damage and corrosion on aerospace-grade alloys (Al 7075).
- Conducted potentiodynamic polarization, tribology, and hardness testing, using SEM imaging to evaluate material restoration in extreme environments.



- Analyzed failure patterns and designed experiments to assess component lifespan and restoration efficacy, contributing to sustainability in aerospace manufacturing.

● Undergraduate Researcher – Hydroponic PAW System

Boesl's Lab – Florida International University

Sep. 2024 – Apr. 2025



- Designed a compact hydroponic system integrated with plasma generation to produce Plasma-Activated Water (PAW) as a fertilizer-free growth enhancer.
- Modeled the entire system using SolidWorks, applying thermofluidic and electromechanical design principles to deliver a sustainable, energy-efficient solution for urban agriculture.
- Focused on automation, modular design, and real-world applicability in confined residential spaces.

● Management Intern – Economic Development Administration

U.S. Department of Commerce, Washington D.C. (Remote)

Sep. 2024 – Jan. 2025



- Supported the monitoring of \$500M in federal funding across 12 Tech Hubs and 19 Accelerator Awardees.
- Leveraged Top-Secret security clearance and live data-tracking platforms to produce actionable performance reports to support B2B programs.
- Contributed to the Skills2Bridge initiative, aligning national workforce development with emergent industries

● NASA Applied Chemistry Lab Intern

NASA Kennedy Space Center, FL

Jun. 2024 – Aug. 2024



- Collaborated with engineers to optimize plasma systems for space-based crop production, improving operational efficiency by 32%.
- Tested the efficacy of plasma-activated water on plant growth; conducted chemical analysis using ion chromatography to evaluate time-based compound distribution.
- Conducted mechanical system design, testing, and troubleshooting for plasma volatile organic compound capture and Molten Regolith Electrolysis systems.
- Engaged in multi-system integration and safety-focused experimentation, directly contributing to NASA's sustainable in-situ resource utilization technologies.
- Presented research to NASA's front office leadership and was featured in the NASA Intern Newsletter for project contributions.

● Undergraduate Research Assistant – NSF CELLMET

Cold Spray and Rapid Deposition Lab, FL

Feb.2023 – Jun. 2024



- Conducted a series of mechanical characterization experiments across multiple bio-inspired and biomaterial systems using nanoindentation, tensile testing, tribology, and profilometry.
- Investigated cardiac tissue behavior by simulating normal and tachycardiac environments on porcine left ventricles, informing design parameters for customizable cardiac patches.
- Performed regional nanoindentation on porcine heart samples to understand changes in mechanical properties due to cardiac disease progression.
- Evaluated mechanical characteristics of porcine skin to assess its viability for future transdermal drug delivery systems.
- Modeled bio-mimetic actuation by studying *Mimosa pudica's* stimulus-response behavior to inform artificial heart vasculature design; focused on load response, calcium signaling, and electrical activity.
- Analyzed age-dependent variation in mechanical properties of American alligator teeth to draw parallels with biomaterials used in load-bearing implants.
- Characterized the anti-oxidative and anti-inflammatory potential of Alaskan Chaga mushrooms using mechanical testing techniques, validating traditional medicinal claims with nanoindentation.

● Learning Assistant – Engineering Economy (EGN 3613)

Florida International University, FL

Aug. 2023 – Dec.2024

- Mentored students in engineering economics, focusing on cost estimation, ROI, and time-value-of-money analysis with real-world applications.
- Designed assessments and instructional materials in line with ABET and mechanical engineering standards.
- Strengthened communication and leadership skills by guiding diverse student teams through complex economic evaluations.

● Math Tutor – K–12

Mathnasium, FL

Aug. 2022 – Jun. 2023

- Delivered individualized math instruction to K–12 students, addressing diverse learning styles and academic levels through structured, engaging sessions.
- Identified knowledge gaps through diagnostic assessments and developed personalized lesson plans to reinforce foundational concepts and critical thinking.
- Maintained ongoing communication with parents about student progress, challenges, and achievements, fostering a collaborative support system for academic growth.

PUBLICATIONS

Published

1. Lou, L., Lopez, K. O., **Nair, A. B.**, Desueza, W., & Agarwal, A. (2025b). Micro-mechanosensory insights from nature's Mimosa leaves to shape memory adaptive robotics. *Materials & Design*, 249, 113567.
<https://doi.org/10.1016/j.matdes.2024.113567>
2. Lou, L., **Nair, A. B.**, & Agarwal, A. (2025). Nanoindentation-driven insights into the micro-mechanical and viscoelastic behaviors of porcine atria and ventricles. *ACS Biomaterials Science & Engineering*, 11(8), 4737-4746.
<https://doi.org/10.1021/acsbomaterials.5c00658>

Under Review

3. Azmal Huda Chowdhury, Lihua Lou, **Arya Nair**, Arvind Agarwal.
Mechanical Behavior of Porcine Myocardium Under Cyclic Loading and Strain Rate Variations.
Journal of the Mechanical Behavior of Biomedical Materials (Under Review)

AWARDS AND HONORS

Summer Venture in Management Program (SVMP)

2025

Harvard Business School – Cambridge, MA

Selected among top 0.06% of applicants for this competitive, MBA-level immersion in business leadership



FIU Outstanding Undergraduate Scholar,
Florida International University

2025 – 2026

Recognized consecutively for exceptional academic performance and contributions to undergraduate research.



FIU Outstanding Undergraduate Scholar,
Florida International University

2024 – 2025

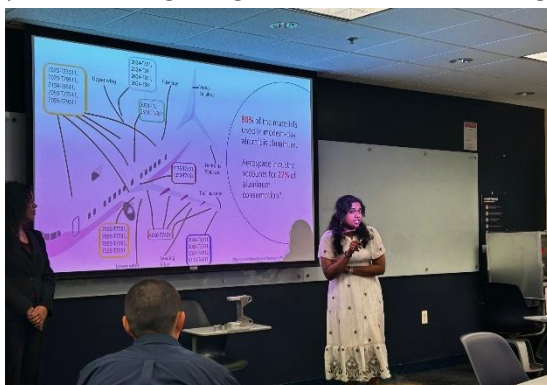
Selected as one of the top undergraduate scholars out of 45,000+ students for academic excellence, leadership, and significant research contributions.



Capstone Best Senior Design I Project,
Florida International University

2024

Recognized as the top project among all Senior Design I teams for innovative research on Cold Spray Restoration of aerospace components, integrating advanced manufacturing techniques and materials testing.



MECHANICAL AND MATERIALS ENGINEERING DEPARTMENT
FIU
Engineering & Computing

Aerospace Component Restoration using Cold Spray
Students: Jamiyah Collins, Arya B. Nair, Samantha Salinas, Erika Santos
Mentor: David A. Vitek, Ph.D.
Advisor: Dr. Tony Pham, Florida International University

Experimental Design

I. Sample Preparation

II. Cold Spray Method

III. Repair Evaluation Cont.

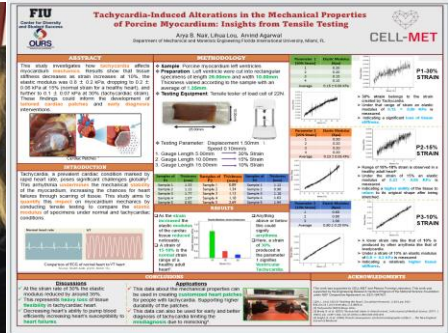
KEY TAKEAWAYS

Ronald E. McNair Post-Baccalaureate Achievement Scholar

2023-2025

United States Department of Education

Named as the McNair Scholar for demonstrating strong academic potential and research capability within the STEM.



LEADERSHIP

- FIU Student Government Association – RSO Council President
June 2023 – July 2024
Oversaw 253 student organizations and led the passing of a historic 200% increase in club funding.
- TRIO Student Support Service Club – Vice President
January 2023 – June 2023
Managed club events and peer support programs for underrepresented, financially disadvantaged students.
- FIU American Cancer Society Relay for Life – Executive Committee Member
June 2022 – June 2023
Led the campus-wide hair donation initiative and coordinated cancer awareness campaigns.



FIU News

Students, staff, community join forces to raise more than \$100,000 for prevention and awareness of cancer, suicide

Campus & Community

