MED COULIBALY-SYLLA

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EDUCATION

Princeton University - ***Bachelor of Science, Mechanical & Aerospace Engineering*** **August 2021 – May 2025**
Minors: Computer Science and Material Science Engineering | Certificates: Robotics & Intelligent Systems
Honors: QuestBridge Scholarship; Jack Kent Cooke Scholarship; Blacks at Microsoft Scholarship; GEM Fellowship

EXPERIENCE

Robotics Club, Princeton University, Princeton, NJ **October 2021 – May 2025**
Robotic Engineer

- Implemented a new member recruitment strategy, increasing club membership by 30% in one academic year.
- Led the material selection process for various robotics projects, optimizing the use of metals, composites, and polymers for strength, durability, and weight considerations.
- Utilized CREO for CAD modeling, ensuring precise design and integration of components in robotic systems.

Princeton Electric Speedboating, Princeton University, Princeton, NJ **September 2021 – May 2025**
Mechanical Engineer

- Built and raced electric boats at competitions worldwide to advance sustainability in the marine industry.
- Provided 40+ undergraduates with valuable hands-on experience and familiarity with cutting-edge technology.
- Broke world record for electric speedboating, averaging 114 mph, 88 mph faster than the previous record.
- Designed and fabricated custom parts using advanced manufacturing techniques, including CNC machining.

NASA Jet Propulsion Laboratory Internship, Caltech, Pasadena, CA **September 2022 – December 2022**
Intern

- Assisted JPL scientists and engineers with research and space missions exploring Earth, Mars, and the Solar System.
- Collaborated on the development of a new satellite propulsion system, reducing fuel consumption by 15%.
- Utilized CAD software to create detailed models of spacecraft components, supporting the iterative design process.
- Worked on cross-functional teams, integrating feedback from engineering, science, and mission operations to refine design solutions.

PROJECTS & RESEARCH

Senior Thesis – Laser-Ablation Propulsion for Mars Exploration **September 2024 – May 2025**

- Conducted ANSYS simulations comparing carbon composite vs. regolith targets; validated with analytical models.
- Modeled plume expansion dynamics and thrust efficiency, validating results with analytical models.
- Implemented diagnostics for measuring impulse bit, mass loss, and plume velocity distribution.
- Developed mission-level scaling models for mobility applications (rovers, landers, surface hoppers).

Swarm Robotics Research Intern (with Prof. Radhika Nagpal), **Princeton University**, Princeton, NJ **June 2024 – Aug 2024**

- Contributed to the design and testing of autonomous swarm robots, focusing on collective behaviors such as formation control and distributed navigation.
- Programmed and debugged robot behaviors using Python/C++ and ROS, enabling improved swarm coordination and communication.
- Conducted experiments with swarms of 20+ robots, analyzing metrics of robustness, scalability, and fault tolerance under varied environmental conditions.

FLOATing DRAGON (BRGR) Team, Princeton University, Princeton, NJ **October 2023 – April 2024**
Balloon Research Glider Recovery (BRGR) Team Member

- Assisted in the design and development of an autonomous glider for a NASA-sponsored competition.
- Contributed to the team's design, which won finalist status, securing $5,000 in support.
- Integrated GPS and onboard sensors, improving navigation accuracy by 15%.
- Selected materials and tested for durability, reducing glider weight by 10%

Community Care Day, Princeton University, Princeton, NJ **March 2023 – October 2023**
Initiator and Community Gathering Coordinator

- Initiated and led Community Care Day, integrating project management and innovation for campus-wide engagement.
- Orchestrated logistics for a large-scale gathering, applying engineering principles to space layout and resource allocation.
- Managed a team of 20 volunteers, demonstrating leadership and effective communication in a diverse team environment.
- Implemented data-driven promotion, achieving a turnout of 2,150+, showcasing analytical and problem-solving skills.

SKILLS

CAD (CREO, AutoCAD, NX), MATLAB, Python, LabVIEW | Manufacturing: composites, CNC, 3D printing
Languages: Fluent in Spanish and Bambara. Intermediate in Japanese and French.

Relevant Coursework: Mechanical Design; Thermodynamics; Heat Transfer; Fluid Mechanics; Materials Science; Robotics; Dynamics