LOFTY-JOHN C. ANYANWU

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EDUCATION

Yale University **August 2024 - May 2028**

B.S Computer Science & Molecular Biochemistry and Biophysics

Relevant Coursework: Multivariable Calculus, Mathematical Modelling for Biosciences, Organic Chemistry 1 & 2, Introduction to Computer Programming

Activities & Societies: Yale International Genetically Engineered Machine (iGEM); Yale Chem-E Car; Yale Space Rover

Honors & Awards: 1517 Fund Grantee, Michael Manzella Foundation Fellow, Yale First-Year Summer Research Fellowship

EXPERIENCE

Yale University, Department of Molecular, Cellular and Developmental Biology **New Haven, CT**

Researcher in Synthetic Biology *May 2025 – August 2025*

- Enhancing L-asparaginase half-life and potency by repurposing the TAG (amber) stop codon to site-specifically incorporate 4-propargyloxy-L-phenylalanine and enable fatty-acid conjugation.

Non-Trivial **Remote**

Research Fellow & Facilitator *June. 2023 – August 2024*

- Conducted research on indoor air quality (IAQ) in Sub-Saharan Africa, culminating in a paper and securing a $500 research grant to support the project.
- Taught core fellowship curriculum and led operational efforts, including interviews, outreach, team coordination, and oversight of projects addressing biosecurity and AI risk.

Impact Academy **Bengaluru, India**

Research Fellow - Future Academy *Sept. 2023 – March 2024*

- Conducted in-depth quantitative and qualitative research on indoor air quality (IAQ) in sub-Saharan Africa, measuring disease burden (DALYs), modelling cost-benefit scenarios, and synthesizing stakeholder insights to assess IAQ interventions' health and pandemic-preparedness impact.
- Authored evidence-based policy briefs and feasibility models that evaluated tractable IAQ improvement strategies, compliance/enforcement challenges, and climate-impact trade-offs to guide high-risk donor investment decisions.
- Secured a $7,000 grant to advance the project.

PROJECTS

VisBio

- Developing a Flask-based web tool for uploading protein sequences, computing amino-acid composition and k-mer frequencies, and rendering hydropathy plots and heatmaps via Biopython and matplotlib.

LangPhylo

- Developed a fully automated R Markdown pipeline to preprocess and clean interleaved NEXUS data from the SSWL syntactic database (110 taxa, 129 features), perform Maximum Parsimony inference with bootstrap support and compute CI/RI/RC indices while inferring phylogenies.
- Implemented NeighborNet analyses in SplitsTree 6 alongside custom R scripts to calculate delta scores and Q-residuals, revealing extensive reticulation and limited deep phylogenetic signal in global syntactic data.

Olympiad Charity Foundation **Abuja, Nigeria**

- Collaborating to identify math talents and raise capabilities among Nigerian youth by organizing national mathematics competitions; training top female participants for EGMO 2026.
- Supporting fundraising initiatives, including math camps and partnerships with the Special Maths Academy to expand access to advanced training.

TECHNICAL SKILLS & INTERESTS

Languages: Python, R, Racket, LaTeX

Interests: *De novo* protein design; Biological modelling; Computational Linguistics