

The South African sun bore down as we entered the township of Langa, one of many impactful stops during my Semester at Sea journey, but it wasn't the heat that struck me—it was the stark absence of basic amenities like electricity, running water, and reliable healthcare. The dusty roads, lined with makeshift homes constructed from salvaged materials, reflected the resilience of a community that had adapted to immense scarcity. Yet amidst the hardship, there was a warmth that transcended circumstance. Children ran toward us, laughing, and families welcomed us as though we were long-lost friends.

One moment in Langa remains particularly vivid: a woman crafting jewelry from recycled materials. Her pieces, though simple, carried a richness beyond their physical form; they symbolized a community's resourcefulness and dignity, a determination to hold onto its traditions despite immense poverty. The perseverance I encountered left a lasting impression, revealing how solutions to healthcare challenges must account for socio-economic realities alongside biological needs. This experience marked a turning point, sparking my interest in bioinformatics as a field where data-driven solutions can address complex, interconnected healthcare challenges, especially those shaped by social and economic factors.

My academic journey has since been a deliberate effort to cultivate this multidisciplinary expertise. At Cal Poly, my involvement in the Student Managed Portfolio Project (SMPP) deepened my understanding of the financial dimensions of healthcare. Managing \$1.6 million of the university's fund, I focus on analyzing actively managed healthcare funds like ENSIGN. This work has sharpened my data analysis skills and underscored how financial insights can optimize healthcare delivery, improve resource allocation, and enhance patient outcomes. Through SMPP, I've learned that effective healthcare strategies must bridge both economic and clinical perspectives, as financial sustainability is crucial to delivering impactful, long-term healthcare solutions.

My technical skills expanded further during my internship at Microsoft, where I gained practical experience in healthcare informatics by training machine learning models to automate medical paperwork entry—a process traditionally prone to human error and inefficiency in the highly regulated context of clinical trials. This project highlighted the transformative potential of AI in healthcare, as I witnessed how technology could streamline workflows, increase accuracy, and give healthcare providers more time to focus on patients. This experience solidified my belief that bioinformatics has the potential to revolutionize healthcare by enhancing efficiency and accuracy, making a direct impact on patient care. Working independently on this project also strengthened my problem-solving skills, as I often had to adapt strategies in real time and implement solutions tailored to complex healthcare environments.

I further explored these principles at GreenLight Ag, where I applied machine learning in an agritech setting. Developing a rover equipped with a camera and AI models to assess crop health and detect weed growth, I trained the models to analyze visual data, enabling the rover to

differentiate between healthy crops and potential threats. This project taught me how to address real-world challenges with data-driven solutions and demonstrated how adaptable these approaches can be across fields. This experience fueled my interest in bioinformatics, where such technologies can be leveraged to enhance healthcare diagnostics and patient outcomes, addressing equally pressing challenges.

These experiences, coupled with my coursework in Quantitative Analysis and Biology, have crystallized my commitment to bioinformatics. They have shown me that healthcare is not merely a biological endeavor; it's a multifaceted challenge that requires the integration of social, economic, and technological dimensions. Health informatics, I believe, is where these elements converge, offering a field where data can predict health outcomes, inform personalized treatments, and improve healthcare systems to be inclusive, efficient, and responsive to patient needs.

Driven by this understanding, I am particularly motivated to create advanced diagnostic systems and AI-driven solutions that can deliver real-time healthcare insights. Such tools have the potential to make a meaningful impact in underserved communities like Langa by bridging gaps in healthcare access and enabling timely, data-informed interventions. By tailoring healthcare solutions to meet people where they are, these innovations could empower communities facing socio-economic barriers, creating a pathway toward equitable healthcare. Yale's groundbreaking work in Clinical Research Informatics, particularly Dr. Mary-Anne Hartley's project on Meditron, is an inspiring example of what's possible when cutting-edge machine learning models are used to address real-world medical challenges. Meditron's achievements in open-source medical reasoning, nearly rivaling models like GPT-4, underscore Yale's commitment to impactful, open-access research. The prospect of contributing to initiatives like Meditron, where the integration of LLM technology can bring sophisticated, scalable tools to healthcare globally, aligns seamlessly with my goals.

As I move forward, I am eager to apply my skills and insights to health informatics. The resilience I witnessed in Langa, the analytical rigor developed in SMPP, and the technical expertise gained at Microsoft all contribute to my vision of data-driven, compassionate, and equitable healthcare systems. I am driven by a commitment to support and uplift diverse communities, developing solutions that are adaptable, culturally informed, and accessible to all.

The journey I've taken—from the resourcefulness of Langa's community to the analytical demands of Cal Poly's SMPP and the technical rigor of Microsoft's healthcare projects—has solidified my belief that bioinformatics can bridge profound gaps in healthcare. I am prepared to deepen my expertise and embrace new challenges in this field, knowing that each step I take brings me closer to making a lasting impact on global healthcare. My goal is to create systems that empower both patients and providers, ensuring that equitable, quality care is not a privilege but a universal right.

PERSONAL ESSAY

Much like the Eiffel Tower, my identity has been shaped by layers of history, complexity, and resilience. When it was first unveiled, the tower faced skepticism, yet it became a symbol of France—bridging tradition with innovation. Similarly, growing up in a bilingual French-English household has placed me between two worlds: the rich heritage of French as my family language and the expansive reach of English in my education. Each language, like the iron beams of the tower, has been essential to shaping who I am.

At home, French rooted me in my cultural history and identity. English, meanwhile, served as my bridge to the wider world, sparking intellectual growth and introducing new ideas. Navigating these two languages has given me a unique ability to see the world through multiple lenses, cultivating a cognitive flexibility that has fueled my curiosity and shaped my approach to complex, interdisciplinary questions.

At Yale, I see my bicultural background as a valuable asset. Just as the Eiffel Tower transformed into a unifying emblem, my ability to move between cultures and perspectives enables me to foster interdisciplinary dialogue. Yale's collaborative environment aligns perfectly with my goals, and I am eager to contribute my background to its vibrant academic community—bridging divides, fostering inclusivity, and connecting diverse ideas.

ADDITIONAL ESSAY

My accelerated path to graduating in three years began well before Cal Poly, rooted in a deep curiosity and drive to explore beyond the ordinary. In fifth grade, I joined the Academic Talent Development Program at UC Berkeley, diving into subjects like coding and creative writing that revealed the endless possibilities of learning. By sixth grade, I was dissecting brains, eyes, and even gummy bears in a human anatomy class, discovering anatomical insights through hands-on experience. Each new subject—biotechnology, psychology, law, and justice—fueled my desire to view the world through multiple lenses, setting me on an accelerated academic path.

Determined to build a strong foundation in math, I joined Kumon, tackling challenging concepts independently and developing resilience and self-reliance. High school introduced me to community college courses in criminal investigation and intelligence analysis, where I studied blood splatter patterns in my room and wrote a one-page brief analyzing the Ukraine-Russia conflict through data and historical context. These experiences reinforced my commitment to rigorous scholarship, pushing my intellectual boundaries and expanding my global awareness.

After moving to Paris and then finding myself confined by the COVID-19 lockdown, my desire for a global perspective deepened further. With only an hour outdoors each day, I discovered Semester at Sea—a transformative program combining rigorous academics with international exploration. Studying aboard a ship while visiting three continents allowed me to confront global

issues firsthand and see education beyond the classroom. Each destination offered unique perspectives, strengthening my commitment to understanding complex, interconnected global challenges.

This journey of learning across disciplines and borders has redefined my sense of purpose. I am driven by the belief that innovative problem-solving thrives at the intersection of fields and perspectives—a commitment that aligns deeply with Yale's interdisciplinary and forward-thinking approach. Ready to challenge myself further, I look forward to applying my experiences in ways that foster real change, bringing insights that bridge disciplines and inspire solutions for complex global issues.