1. Describe your short term and long term academic and professional intentions.\*  (250 word limit)

On the road, your GPS keeps estimating your position, checks live traffic, and recomputes the fastest route under speed limits and closures. You still drive the car by steering, throttling the gas, braking, and avoiding hazards. In orbit there are no lanes or signs, and everything moves at kilometers per second. Spacecraft use GNC: guidance plans the trajectory, navigation estimates position/velocity from noisy sensors, and control fires thrusters to stay on course. My goal is to build open-source GNC infrastructure so missions can travel safely from low Earth orbit to deep space, cutting cost and widening access.

I’ve built Jupiter-moon mapping trajectories, orbit state-estimation algorithms, lunar-lander engine control, integrated space-grade flight hardware, and Electro-Optical tracking tools for resident space objects. I’ve worked across startups, major aerospace, a university-affiliated research center, and a Federally Funded Research and Development Center.

My short-term goal is to turn my foundation into flight-ready autonomy. I’ll focus on three threads: (1) online trajectory optimization so a spacecraft can replan in orbit; (2) adaptive, model-light state estimation that self-tunes and learns dynamics; and (3) model-free disturbance-rejection control. Outputs: 2–3 first-author papers, an open-source GNC toolkit, and validation through high-fidelity simulation, software-in-the-loop, hardware-in-the-loop, and—stretch goal—an on-orbit demo. Stanford’s Space Rendezvous Lab (Prof. Simone D’Amico) is an ideal home for this work. For my Keystone Project, I’ll pair the open tools with K–12 outreach and local school workshops to lower barriers for the next generation.

Long term, I want to build a “space highway”—the software and standards that make moving from launch to LEO, cislunar space, and deep space as predictable as driving an interstate on Earth. An open-source GNC stack—trajectory planning, model-light navigation, and robust control—plus shared protocols for rendezvous, deorbit, and traffic management would cut ops cost, raise safety, and enable smooth handoffs between mission phases. I’ll take it from lab to flight and work with industry on certification and adoption so universities, startups, and agencies can plug in and extend it. The aim: reliable, affordable deep-space operations that anyone can build on.

1. Please tell us when you:\* (*All fields required*)

* Engaged with someone with a different perspective
  1. Many students in my intro rocketry class said, “I don’t belong here.” That was their perspective on their ability; mine was that they could succeed. I engaged by listening, naming the fear, and asking what drew them to the course. We mapped strengths to roles, set a small first build, paired peers, and I checked in weekly. By term’s end, every team had designed, built, launched, and analyzed a rocket—the same students who once planned to drop were the ones walking me through their trajectory plots.
* Acted with courage
  1. As a TA in freshman astronomy, many students didn’t know how to study. I set up peer-led sessions where they picked topics, wrote questions, taught each other; I coached process, not answers, and we compiled a student-made study guide. The professor said it was unfair—that I was doing the work. I asked for a 1:1, listened, then explained the guardrails and why these first-term students needed structure, not solutions. I held my line. We kept the sessions. Participation rose and my section’s exam average was about 10% higher.
* Fell short of expectations
  1. In my first grad term I chose to take five classes while working two jobs to limit debt. That choice burned me out and put me on academic probation (2.78). I owned it and changed course: secured TA/RA funding, right-sized my load, lived in office hours, built study groups, and time-blocked my week. The next term I earned 3.66 (cumulative back above 3.0) and finished at 3.28. The habit stuck—cap credits, ask early, keep repeatable routines—and I now coach my students to do the same.

1. Please tell us eight improbable facts about you. These could include: facts that people wouldn’t expect to be true and/or facts that others are surprised to learn about you.\* (*All fields required*) Combined Word Count (out of 150 words maximum)
   1. I started working with my uncle at 8 years old fixing houses
   2. All my friends growing up were South Sudanese Refugees from the Dinka tribe
   3. I wanted to be a magician when I was younger
   4. I am the first in my family to study beyond eighth grade through college and graduate school.
   5. In my first grad semester I was on probation and nearly dismissed.
   6. I helped develop, test, and implement software and hardware now flying on spacecraft in orbit.
   7. I’ve crossed the country three times to pursue career opportunities.
2. Connect the dots. How have the influences in your life shaped you?\* (Limit: 550 words)

Saturday morning, sun through the blinds; a knock—my uncle picking me up for another renovation shift. Over gas-station breakfast he’d tell me his path: after the war his father was imprisoned; as a kid he walked 10 kilometers to cut branches to sell as firewood. He loved math, rockets, and engines, but politics tanked his grades and kept him out of high school while he supported his parents and six siblings. They escaped to the U.S., where he worked in a window factory. “I wasn’t allowed to work with my mind, so I have to use only my hands” he told me. “You have that chance—use it.”

At that age I was already hooked on space. We’d talk orbits while screwing in drywall, ripping carpet, or running pipes. He kept it simple: when life throws you chaos, your mind and your hands are your tools to learn, work, and help others. He was my only father figure. From him I took perseverance and responsibility to leave things better than I found them.

Home was unstable—Section 8, assistance, a lot of noise. School was a safe place: I was fed, seen, and free to learn about space. That’s when I knew what I wanted to study, and my uncle’s message made the path clear: education is the way to use my mind.

I didn’t know who I wanted to be, but I knew I could work. In college I washed dishes, cooked, cut meat, and delivered food while chasing space and teaching. My grades sank; scholarships fell through; only one grad program said yes. In that first term I took five classes while working two jobs and landed on probation. I remembered my uncle’s lesson—use your mind—and pivoted: I earned research and teaching assistantships and rebuilt my footing.

To work in guidance, navigation, and control, I needed deeper skills and stronger academics, so I narrowed to space systems engineering for a second masters. I crossed the country for hands-on experiences, major aerospace, a university-affiliated research center, and a Federally Funded Research and Development Center—while holding a higher academic bar.

I don’t let circumstances define the ceiling; I use them as fuel. My aim now is to build open, reliable space infrastructure—and to run a research program that pairs grads and undergrads, pays students for their time, and does K–12 outreach, so marginalized students face fewer barriers than I did.