Rishab Subramaniyan
Erin Suh
11/05/2024

**Interest Summary**

**Part I: Interest Summary Narrative**

My academic strengths lie at the intersection of mathematics and computer science. I've especially in recent years gravitated toward analytical and abstract reasoning and enjoyed fields that demand deep problem-solving, from discrete mathematics to algorithmic design. I prefer assignments that let me build or prove things such as writing elegant code and deriving mathematical relationships. My weaknesses are classes that require lots of memorization such as history and biology. I enjoy taking classes where I can derive things and form an intuitive understanding of its structures. Another issue I have is that I tend to rush through school assignments, often completing them at the last minute. Internally, I prefer to dedicate my time and energy to more engaging math problems, project ideas, and personal writing which I find more fulfilling and so try to stay more lean with other work.

A field that I didn't know about prior to UGA that sounds interesting is linguistics. I have recently learned about how a lot of the structures and definitions of language have a mathematical and structural element to them which interests me a lot. Regarding opportunities I am excited for in the next four years, I am especially interested in the mathematics Directed Reading Program and subsequent research. Volunteering through tutoring elementary age kids has also spoken out to me greatly, something I have been able to do through the MathCounts Outreach organization. As such, I plan to join the similar Whatever It Takes organization which I learned about through the 1000H service class session. Lastly, the Oxford Study Abroad summer term strikes me, for the atmosphere seems amazing and it also has relevant classes for my major.

**Part II: Course and Area of Study Interest**

*Currently Declared Major(s), Minor(s), and/or Certificates(s):*

- Majors: Mathematics and Computer Science

*Interesting Academic Areas of Study:*

- Economics: Economics appeals to my analytical and problem-solving strengths, as it involves understanding how markets function and how decisions are made in the face of scarcity. I enjoy exploring patterns and trends, which aligns well with studying economic theory and data-driven policy analysis.
- Physics: Physics suits my interest in understanding how the natural world works through logical reasoning and quantitative analysis. I'm drawn to breaking down complex problems and applying mathematical models to explain phenomena, which plays to my strengths in critical thinking and math.

*Interesting Courses*

- MATH 4000: Abstract Algebra: This course appeals to my love for abstract reasoning and proving mathematical relationships. I'm excited by the idea of exploring the fundamental structures that underpin various mathematical fields.

- CSCI 4550: Introduction to Artificial Intelligence: Given my interest in problem-solving and algorithmic design, this course would allow me to delve into how intelligent systems are built and the theoretical foundations behind them, which I find incredibly compelling.
- LING 3150: Generative Syntax: Building on my newfound interest in linguistics, this course would allow me to explore the patterns, structural elements, and rule systems of language, which I've found to have fascinating connections to logic.
- CSCI 4520: Functional Programming: I'm drawn to strengthening my formal argumentation and logical reasoning skills, and I also am interested in recursive thinking and methodologies.
- CSCI 4370: Database Management: I am interested in understanding how data is organized, stored, and retrieved efficiently, as this is a fundamental aspect of many real-world applications and a critical skill for any computer scientist. As our world continues to become more digital, databases will surely continue to become more and more important.
- STAT 4210: Statistical Methods: This course would provide valuable tools for data analysis and interpretation, which are essential in fields like machine learning and data science, where I envision myself applying my skills.
- ANTH 2002: Tombs and Temples: I have memories since childhood of visits to museums with my sister, and so archaeology is a more specific interest of mine which would be fun to learn.

**Part III: Extracurricular and Professional Interests**

- Directed Reading Program (DRP) and Subsequent Research: The DRP appeals to me because it offers a structured way to delve into advanced mathematical topics under the guidance of a faculty mentor. This would provide valuable experience in independent study and research, directly aligning with my interest in building and proving mathematical relationships.
- Whatever It Takes (WIT) Tutoring Organization: I am interested in joining WIT because it allows me to continue my passion for tutoring elementary-aged children, building on my positive experiences with MathCounts Outreach.
- Oxford Study Abroad Summer Term: The Oxford Study Abroad program particularly attracts me due to its strong academic reputation and the opportunity to immerse myself in a different cultural and academic environment. The program offers courses relevant to my major like CSCI 3000 and the historical atmosphere of Oxford seems like an inspiring place for personal growth.
- Software Engineering Internship: I am keen to pursue a software engineering internship to apply my computer science and mathematical skills in a real-world industry setting. I want to gain practical experience in building software, working in a team, and tackling complex problems that demand elegant code solutions.
- Undergraduate Research in Natural Language Processing or Computational Linguistics: My newfound interest in linguistics, particularly its mathematical and structural elements, makes me eager to explore research opportunities in computational linguistics. I am also interested in how these principles apply to modern LLMs.

Timeline: During freshman and sophomore years, I plan to engage in Whatever It Takes (WIT) Tutoring. In freshman spring, I also plan to consider the Directed Reading Program (DRP), and aim for the Oxford Study Abroad Summer Term or a Software Engineering Internship during the summer. Finally, in junior and senior years, pursue undergraduate research in Natural Language Processing or Computational Linguistics.

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Interest Summary Reflection

When I look back on this semester, I realize that much of my experience at UGA has been about gradual adjustments rather than big revelations. While I can't point to one life-changing moment, I have found that many shifts in how I learn, communicate, and connect with others have slowly changed my perspective. One class that I have found to be impactful to my surprise is my 1050H English class this semester with Professor Elizabeth Davis. Rather than the grading being based on timed essays, or perfect this or that, the class emphasizes communication of ideas as well as labor and effort with the perspective that writing is a process. The class has given me the opportunity to take more risks with my writing and try different styles, and we also read and discuss texts that are directly relevant to our changing world as we know it.

I have also enjoyed volunteering as a part of the MathCounts Outreach organization at UGA. It has given me the opportunity to connect and talk with upperclassmen in the honors college, as well as play and have fun teaching and playing math games every week. At UGA, the volunteering I have done feels a lot more impactful and collaborative than what I have done in the past. I also had the privilege of attending the Andrew Cathy Signature Lecture Series, where I was inspired by his journey to becoming the CEO of Chick-fil-A, and how his experiences at UGA profoundly shaped his leadership and vision.

This semester has really brought into focus how my academic strengths in math and computer science, particularly my love for analytical and abstract reasoning will steer my university journey. I enjoy work that involves building and proving concepts, like deriving mathematical relationships. This is why courses like MATH 4000: Abstract Algebra immediately caught my eye where the idea of exploring the fundamental structures of mathematics like groups, integers, and modular arithmetic. Similarly, CSCI 4550: Introduction to Artificial Intelligence and CSCI 4520: Functional Programming resonate with my preference for problem-solving and logical reasoning.

Conversely, my struggles with subjects that demand rote memorization, such as history or biology, have become even clearer. I tend to rush through such assignments to free up time for more engaging personal projects and self-directed learning in math and coding. I do understand however that this isn't th best, and that a more well rounded liberal arts education has a lot of benefits.  I am currently actively trying to manage better by consciously reminding myself to get back into focus when I zone out, and it has been working so far.

My initial expectations for UGA were primarily academic, I anticipated a challenging environment where I could delve deeply into my chosen fields. While those expectations have largely been met, what's been altered is my understanding of how much interdisciplinary exploration can enrich my core interests. Discovering linguistics, for example, and its surprising mathematical underpinnings, has opened up a whole new avenue. LING 3150: Generative Syntax is now a course I'm genuinely excited to take, seeing how it connects to the structural logic I enjoy.

Looking ahead, I hope to see a university experience marked by intellectual growth, meaningful contributions, and a broadened perspective. I want to have pursued research that pushed the boundaries of my creativity and ability to ask unique questions and also at the same time give back to the community. Currently, on my university trajectory I feel like I have identified my core passions and am actively seeking opportunities to explore them more deeply. The challenge now is to balance this without falling back into some of my older procrastination and rushing habits.

The Directed Reading Program (DRP) in mathematics, ideally in my freshman spring, feels like a perfect fit for my desire to build and prove mathematical relationships under mentorship. This directly feeds into my longer-term goal of undergraduate research in Natural Language Processing or AI research during my junior and senior years, a field where my interest in linguistics and its mathematical elements converge. The Oxford Study Abroad Summer Term also excites me for the chance to immerse myself in a different intellectual and cultural landscape. This aligns with my desire for personal growth and a broader perspective.

Furthermore, my involvement with Whatever It Takes (WIT) Tutoring will continue to foster my passion for teaching elementary-aged children, building on my positive experiences with MathCounts Outreach., a software engineering internship during a summer term is crucial for applying my theoretical knowledge to real-world problems and setting myself up for a full time job after college.