Faculty Member Contact Information

Name	Tianyu Li
Contact Info	
SIUE Email	tili@siue.edu
Campus Box	Campus Box 1459
Department	Geography and GIS

1 Funded, 2 Unfunded URCA Assistant

	This position is **ONLY** open to students who have declared a major in this discipline.	**M**
X	This project deals with social justice issues.	💙
X	This project deals with sustainability (green) issues.	🌿
X	This project deals with human health and wellness issues.	➕
X	This project deals with community outreach.	✋
	This mentor's project is interdisciplinary in nature.	I

Are you willing to work with students from outside of your discipline? If yes, which other disciplines?

Yes

How many hours per week will your student(s) be required to work in this position?
(Minimum is 6 hours per week; typical is 9)

9

Will it be possible for your student(s) to earn course credit?

Location of research/creative activities:

Most can be done remotely

Brief description of the nature of the research/creative activity?

Our research project focuses on harnessing the power of artificial intelligence (AI), geospatial science and data science technology to address critical questions related to food and nutrient availability. In an era where global food systems face numerous challenges, including food security, health disparities, and environmental sustainability, understanding the spatial distribution and accessibility of food resources and their impact on nutrition is of paramount importance. This research opportunity invites students to engage in a multidisciplinary exploration of the intersection between geography, data science, and public health to make meaningful contributions to the field.

Brief description of student responsibilities?

Students participating in this research project will be involved in a wide range of tasks that encompass data collection, analysis, and interpretation. The primary objectives of the research are as follows:

1. Data Collection:

• Conducting surveys and fieldwork to gather geospatial data related to food resources, such as supermarkets, farmers' markets, and food deserts.

• Collecting data on the availability and pricing of various food items in different areas.

• Utilizing geospatial tools (e.g., GIS, GPS) and AI technologies to map and capture the spatial distribution of food resources.

• Estimate food calorie and develop food nutrient database

2. Data Analysis:

• Processing and managing geospatial datasets using GIS software.

• Employing statistical and AI techniques and data mining methods to analyze the collected data.

• Assessing the relationship between food resource distribution and nutritional outcomes, such as dietary patterns and health indicators.

• Identifying spatial patterns and disparities in food access and nutrient availability.

3. Interpretation and Visualization:

• Creating maps and visualizations to convey research findings. • Developing interactive dashboards or web applications for public awareness and policy

advocacy.

• Collaborating with peers and mentors to synthesize findings and draw meaningful

conclusions.

4. Literature Review:

• Engaging in a comprehensive review of existing literature in the fields of geospatial

science, nutrition, public health and food accessibility.

• Evaluating the latest methodologies and approaches in the domain and comparing them

with our findings.

URCA Assistant positions are designed to provide students with *research or creative activities* experience. As such, there should be measurable, appropriate outcome goals. What exactly should your student(s) have learned by the end of this experience?

• Participating in this research offers students a unique opportunity to develop critical skills

and gain valuable experience in several areas, including geospatial data collection, analysis, and

visualization. Moreover, students will contribute to cutting-edge AI research that has practical

implications for public health, nutrition, and urban planning. Beyond technical skills, students

will also develop the ability to work collaboratively, think critically, and communicate their

findings effectively.

• Ultimately, this research project aims to shed light on the complex relationships between

food environments and human health, informing policy decisions and interventions to promote

equitable access to nutritious food. Students will not only contribute to our understanding of

these issues but will also gain a deeper appreciation for the real-world impact of geospatial and

data science in addressing pressing global challenges.

• As a student participating in this research, you will be at the forefront of a burgeoning

field that intersects geospatial science, data analysis, and public health, with the potential to

make a meaningful difference in the lives of individuals and communities.

Requirements of Students

If the position(s) require students to be available at certain times each week (as opposed to them being able to set their own hours) please indicate all required days and times:

n/a

If the location of the research/creative activities involves off campus work, must students provide their own transportation?

Students must be able to provide their own transportation conducting surveys and

fieldwork.

Must students have taken any prerequisite classes? Please list classes and preferred grades:

n/a

Other requirements or notes to applicants:

• Are you passionate about the frontier of AI and data science? Join our research team and

delve into cutting-edge projects shaping the future of GeoAI! We're looking for

enthusiastic students eager to explore AI and data science while contributing to

groundbreaking research.

• Key Requirements:

• 1. Passionate about AI and Data Science: Bring your curiosity and drive to explore

the realms of artificial intelligence and data science.

• 2. Effective Communication & Timely Reporting: Strong communication skills are

essential for seamless collaboration. We value punctuality in reporting progress, ensuring

our projects stay on track.