





Faculty Member Contact Information

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Contact Info	
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Department	Computer Science

1 Funded URCA Assistant

	This position is ONLY open to students who have declared a major in this discipline.	M
	This project deals with social justice issues.	
	This project deals with sustainability (green) issues.	
	This project deals with human health and wellness issues.	
	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?

- No

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)

- 10

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

- No

Location of research/creative activities:

- anywhere they can use a laptop

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

We are analyzing deidentified course sequence and grade data for students from 2010 onwards to construct meaningful models of probabilistic networks connecting prerequisite to requisite courses in STEM programs with an eye towards understanding critical sub-paths in STEM majors. In our recent published work, we constructed and analyzed the course-prerequisite networks from publicly available catalog data for 5 midwestern universities. In this work, we are fine-tuning our SIUE network using the actual student flow data through courses. The implementations require proficiency in python libraries including networkX and reptile in addition to some basic familiarity with graph theory, data science, and using our course catalog efficiently.

Brief description of student responsibilities?

The student will be working in a research team that includes myself, my doctoral student, and my masters student. While I am responsible for the general direction and all theoretical and algorithmic aspects of modeling, my graduate students will be leading the implementations. In this context, the primary responsibility of the URCA Assistant is to aid the graduate students in the automatic modeling/translation of course prerequisite information into network form, which is done with both reptile and networkX python libraries. Sometimes, the constructed networks need to be double checked due to complex exceptions that arise, and the URCA assistant is especially important in checking the correctness of such situations.

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?

The URCA student will gain invaluable experience:

- * Working with a research and programming team
- * on a problem that is directly meaningful to themselves and every STEM student
- * learning data science, python graph theory, and probability tools and methods incredibly relevant to a computer science student.

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?

- N/A

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

- The student must have received at least a B grade in CS111 and CS150 before applying. The student must also have taken CS234 with an expected grade of at least B before SP25.

Other requirements or notes to applicants:

- A knowledge of python networkX and reptile libraries is preferred.