

# Research at the Department of Computer and Information Science

Oliver Bonham-Carter

Spring 2024

# Value of an Education

Research at  
the  
Department of  
Computer and  
Information  
Science

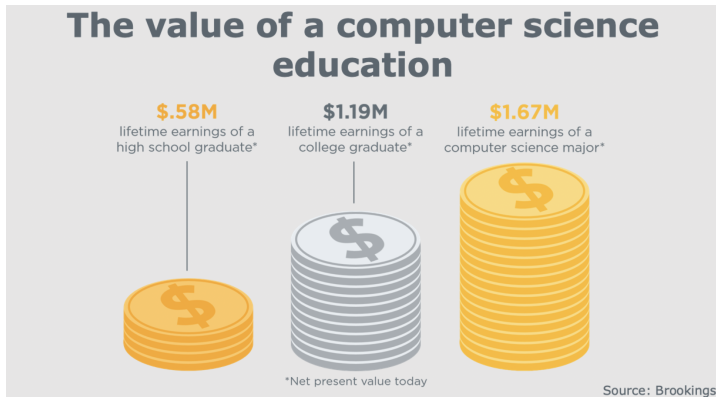
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## STEM

What is this  
department?

## STEM

Research  
Ind study  
SE positions  
Copper Scholar  
Summer research



# Careers from This Education

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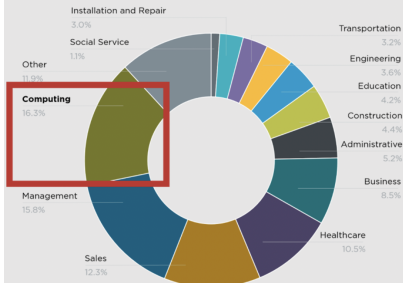
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## Computing jobs are the #1 source of new wages in the United States



## 500,000 current openings:

These jobs are in **every** industry and **every** state, and they're projected to grow at twice the rate of all other jobs.

How to prepare for such careers?

# Four New Majors

## Help Prepare For Careers in CS

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- **Computer Science (A STEM Area)**
- **Data Science (A STEM Area)**
- **Integrative Informatics**
- **Software Engineering**



# Computer Science

## A STEM Area

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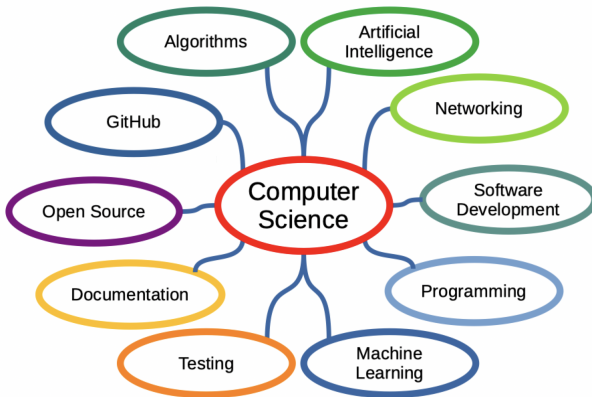
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- Computational theory and the rich interplay between computer hardware and software

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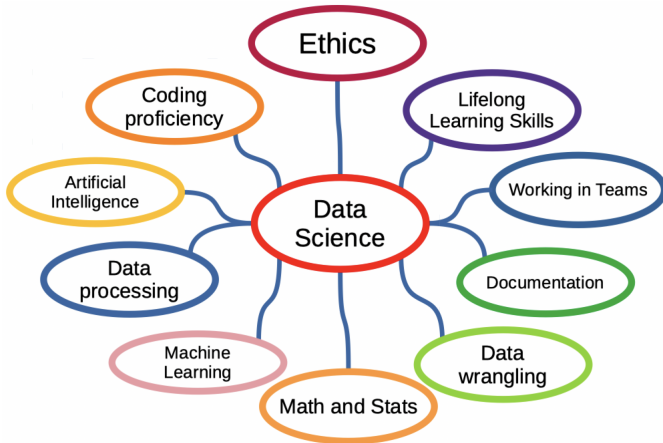
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- Integrated principles and methods to analyze data for decision making, prediction, modeling, and data management

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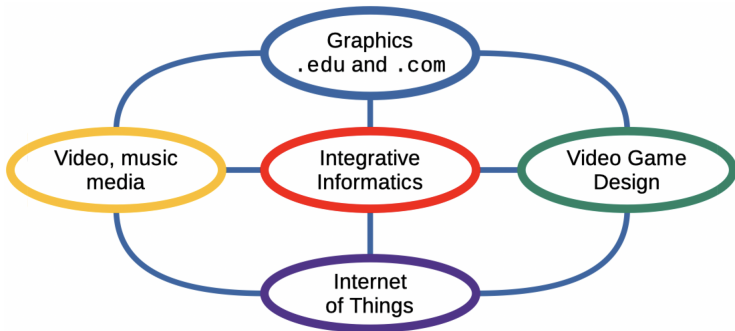
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- Critical approaches to information and technology, with an emphasis on interdisciplinary methods

# Software Engineering

Not a STEM Area

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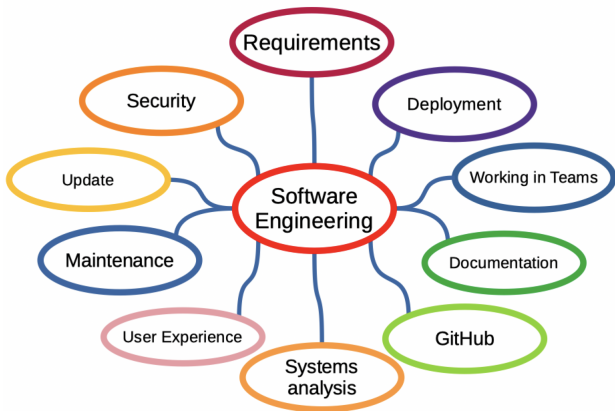
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- Gaining knowledge and skills that teams and individuals need to develop and maintain large-scale software systems

# Opportunities in Research

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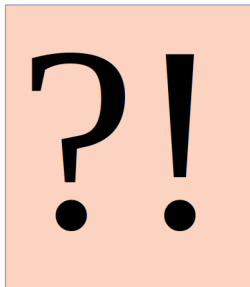
Research

Ind study

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**How do students get into computing careers?**

**Undergraduate research experience**

# Research Opportunities For Students at CIS

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Research

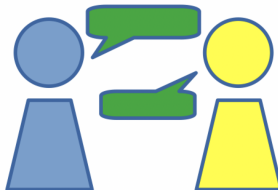
Ind study

SE positions

Cupper Scholar

Summer research

- Independent studies With faculty
- Software engineering positions (funded by donors)
- Cupper scholar fellow (funded by donors)
- Summer research with faculty (funded by donors)



- Let's briefly talk about these!

# Independent Studies With Faculty

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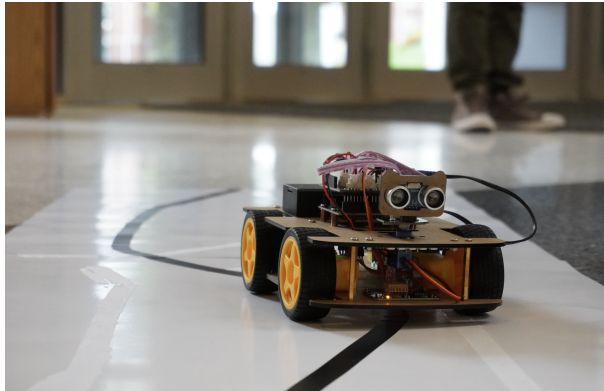
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- Classes for 2 credits
- Outcomes: tools, projects, articles, automated methods for studying data

# Software Engineering Positions (funded by donors)

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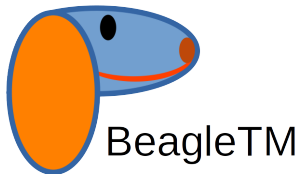
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- **Gatorgrade** : A tool to automate homework *manifest* checking
  - Open source project; Kapfhammer  
<https://github.com/GatorEducator/gatorgrade>
- **BeagleTM**: A tool to determine parallel or associated ideas and methods in PubMed literature
  - Open source project; Bonham-Carter  
<https://github.com/developmentAC/beagleTM>



# Cupper Scholar Fellow (funded by donors)

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**Cupper Scholar**  
Summer research

- Experience conducting research with a faculty member, often resulting in released software
  - Mentoring from alumni who support the Cupper Scholars program
  - Compensation for three to four weeks of full-time work (up to 35 hours per week in April, May, and/or June)
  - Research and career advice from mentors during the spring and/or summer academic semesters
- 
- <https://www.cs.allegheny.edu/research/cupperscholars/>

# Summer Research With Faculty (funded by donors)

## Assistance in Choosing Courses With (hidden) Prerequisites

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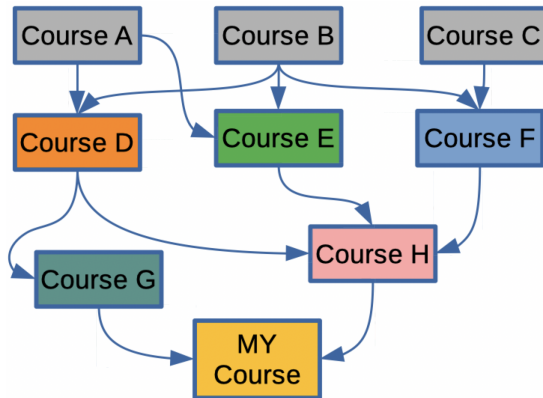
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- Web of Knowledge tool to assist in course registration
- Three students writing software during summer 2023

- CIS faculty regularly publish in top publication venues (IEEE, ACM) with students
- Many CS students produce open source tools with faculty that serve in the greater CS community
- Industrial partners for internships (Erie Insurance, NetApp and others)
- A CS alumni network to help find opportunities for students : TAB (Technical Advisory Board)
  - <https://www.cs.allegheny.edu/about/tab/>

# Fun Facts

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- And, our department hosts an *iTea* event each Friday at 2:15pm to 2:45pm (and you're all invited to join us!)
  - <https://www.oliverbonhamcarter.com/forfun/itea/itea/>