Data Science Program

Lisa Altman
Education Program Coordinator
Goergen Institute for Data Science
and Artificial Intelligence,
University of Rochester

Ajay Anand
Deputy Director;
Professor of Data Science
Goergen Institute for Data Science
and Artificial Intelligence,
University of Rochester

UNIVERSITY of ROCHESTER

Student Panel

Meg Hanson
Class of 2026
Data Science BA, CS minor, math minor
Peer Advisor, Varsity Athlete, Teaching Assistant/Grader, Academic Tutor

Marie Kinchington
Class of 2026
Data Science BS, Business minor
Varsity Athlete, Teaching Assistant/Grader, Research, Academic Tutor

Jingyao Wang Wu
Class of 2027
Data Science BS, Economics BA, math minor
NDSC - President, Teaching Assistant/Tutor, Research, Campus Info Center Attendant

GOERGEN INSTITUTE FOR DATA SCIENCE & AI

UNIVERSITY of ROCHESTER

Student Panel

Lem Kualaou

Class of 2028

Abylay Iskakov

*Class of 2028*

UNIVERSITY *of* ROCHESTER

Goergen Institute for Data Science & Artificial Intelligence (GIDS-AI)

- Education Programs
  - Undergraduate Program
    - Bachelor of Arts/Bachelor of Science
  - Graduate Program
    - Master of Science in Data Science
    - Master of Science in Healthcare in Data Science & AI (Online)
    - Advanced Certificate

- Research
  - Interdisciplinary research and studies in data science at the University of Rochester.
  - Center of Excellence in Data Science (CoE) using data science to advance economic development

UNIVERSITY of ROCHESTER
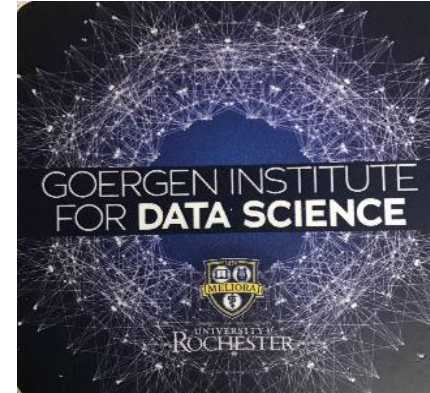
Data Science Program

Data Science Program Graduates at the University of Rochester (updated June 2024)
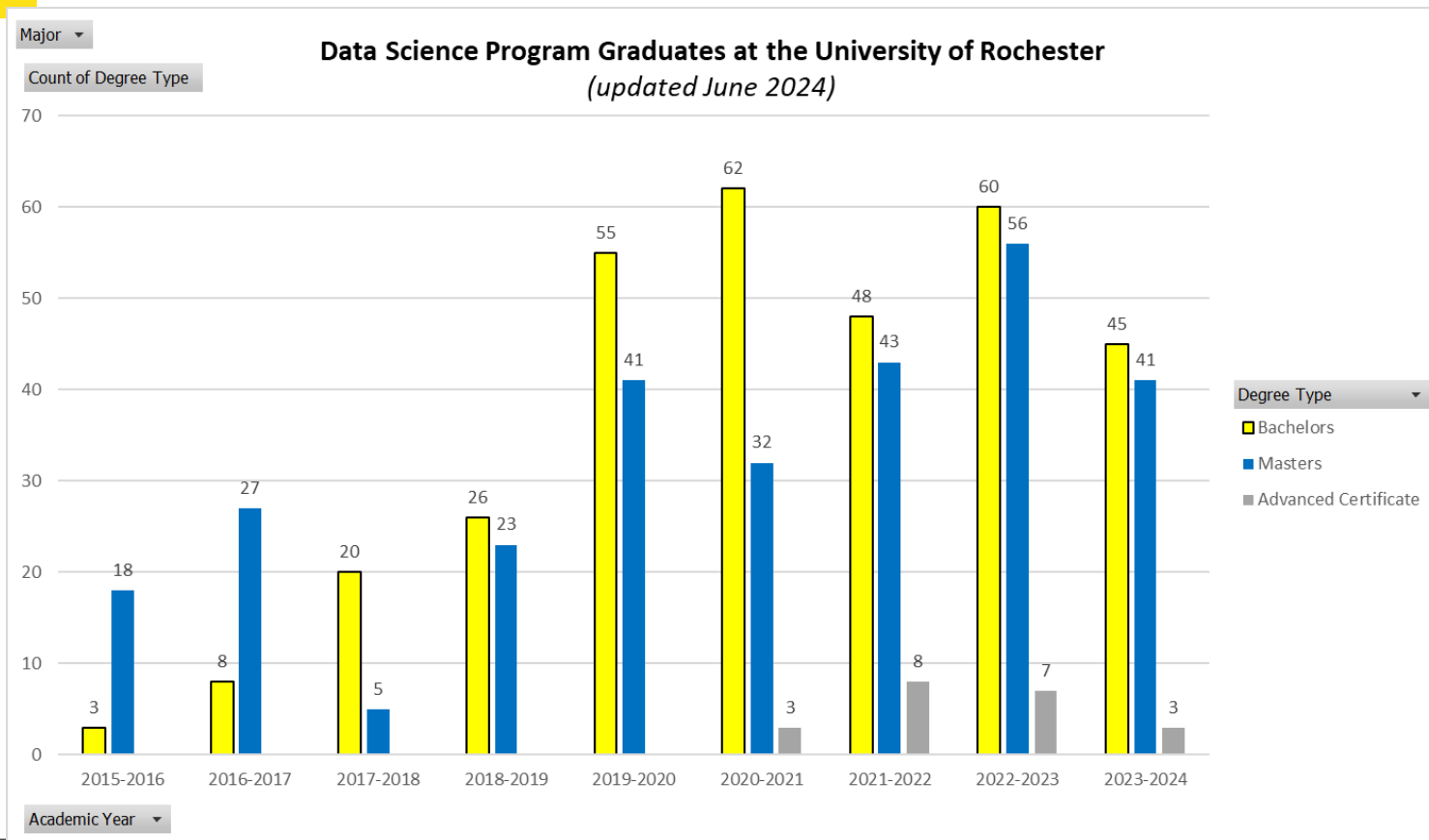
GIDS-AI Research Areas

91 affiliated faculty from 7 schools, 30 departments across the campus. Major areas of expertise of GIDS faculty include:

- artificial intelligence and cognition;
- audio and music engineering;
- augmented and virtual reality;
- complex systems and network data science;
- economics and business data analytics;
- health analytics and digital health;
- human-system interfaces;
- imaging science, visual science, and optics;
- life sciences and biomedical data science;
- linguistics and social data sciences;
- materials design;
- multisensory human and machine perception;
- robotics.

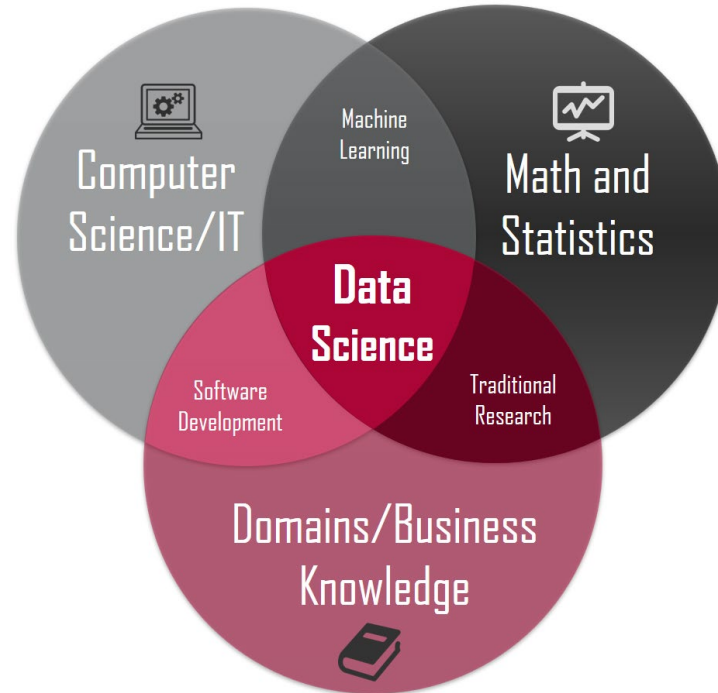Imaging, optics, vision

Health analytics

Life sciences

Foundations of AI

Physical sciences

Social sciences

Computational reality

UNIVERSITY of ROCHESTER

learn

data

science
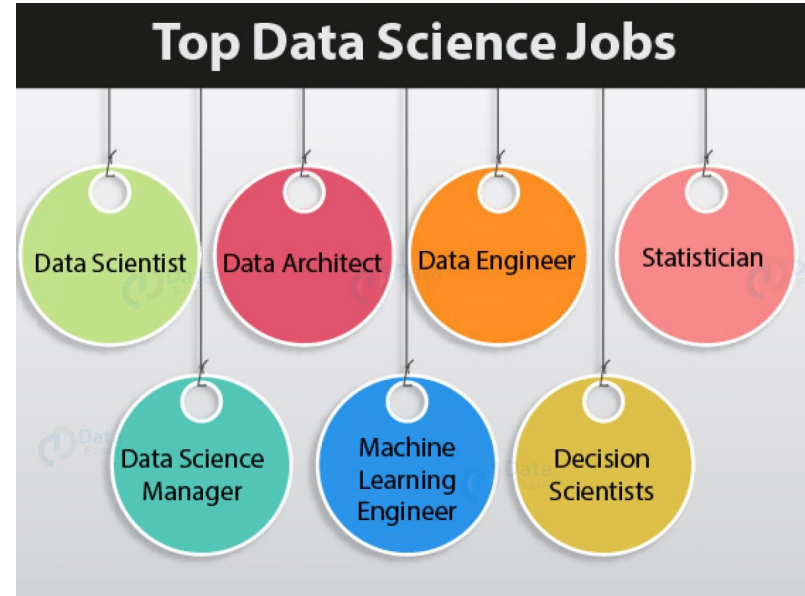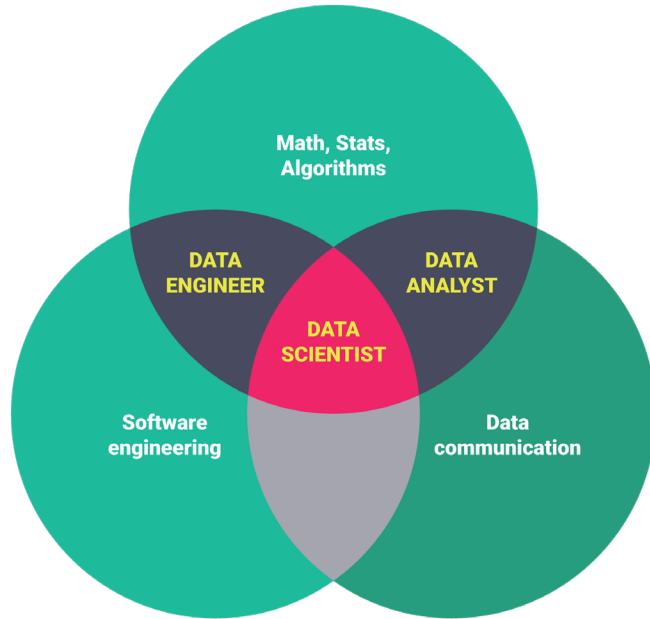
explain big data

What is Data Science

Data science is the creation and application of novel techniques to **collect, curate, analyze, and make discoveries from large-scale data.**

Careers in Data Science – Common Job Titles

Curriculum

Curriculum for Data Science

Prerequisites
(5-6 courses)
- Calculus
- Discrete Mathematics
- Intro Programming
- Data Structures & Algorithms

SAME PREREQS as Computer Science!

AP credits? YES – through MATH, STAT, and CSC departments.

Core Classes
(8 courses)
- Linear Algebra
- Tools for Data Science
- Statistics
- Statistical Machine Learning
- Artificial Intelligence
- Data Mining
- Database Systems

Capstone Class

Application Area (3 courses)
- Biology
- Biomedical Signals and Imaging
- Brain and Cognitive Sciences
- Computer Science, Statistics and Mathematics
- Earth and Environmental Science
- Economics and Business
- Linguistics
- Physics
- Political Science

Curriculum for Data Science

Upper Level Writing

Must complete **two upper-level writing** experiences

- **DSCC 383W**:Data Science Capstone
- **WRT 273:** Communicating Your Professional Identity *(or another upper level writing course)*

Clusters

Data science is a **natural science** major. It therefore requires majors to complete:

- a **humanities** cluster **AND**
- a **social science** cluster

BA vs BS

THREE additional courses to provide a depth in the math and science involved with data science

MATH201

Introduction to Probability

+

MATH203

Introduction to Mathematical Statistics
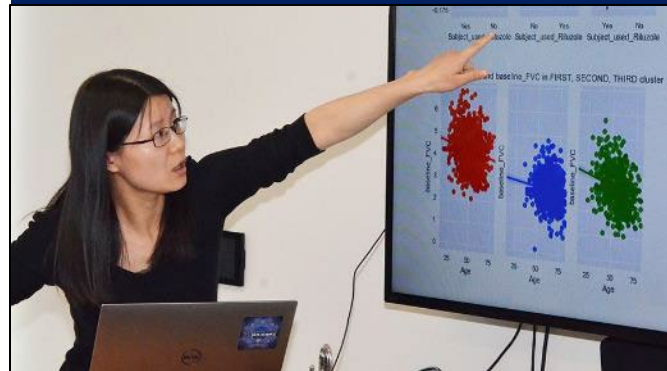
+

One Adv. Elective

- Tools for Data Science
- Time Series Analysis & Forecasting in Data Science
- Logical Foundations of AI
- Machine Learning
- Deep Learning
- Natural Language Processing
- Statistical Speech and Language Processing
- Machine Vision
- Computer Organization
- Design and Analysis of Efficient Algorithms

Data Science BA vs BS Degrees (Class of 2020)

BA 24%

BS 76%
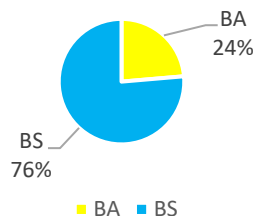
■ BA ■ BS

Capstone Experience

- Conduct real-world analytics projects using data provided by sponsoring organizations

- Complements the coursework in BA/BS data science curriculum

- Emphasizes a team-based learning experience

- Since 2016, over 100 projects from 75 companies have been offered to students

- Projects span a broad range of industry segments such as consumer retail, healthcare, agriculture, government and finance.

Panasonic

Wegmans

RTS REGIONAL TRANSIT SERVICE

RMSC
Rochester Museum & Science Center

GOERGEN INSTITUTE FOR DATA SCIENCE

UNIVERSITY of ROCHESTER

Recent Data Science Practicum Project Highlights

Using Data Science to Improve Reproductive Health

Above: video summarizing Cait Dreisbach's project with data science capstone students. Below: photo of Dr. Dreisbach.

Affiliated faculty member **Cait Dreisbach** is using data science to improve research in reproductive health. Dreisbach, an Assistant Professor in the School of Nursing, partnered with GIDS this spring on a capstone project which focused on developing an algorithm to identify pregnancy episodes for the National Institutes of Health's (NIH) All of Us research program. Working with data science students **Emma Dickerson '24, Hamidah Shaik '24, Tyler Walton '24 (MS)**, and **Shiya Xiao '24**, Dr. Dreisbach and her team built an algorithm to identify and categorize pregnancy episodes accurately and uniformly. The algorithm will aid future research into pregnancy episodes, maternal morbidity, and health discrimination.

Data science students help speed up Rochester Fire Department's emergency responses

Luke Auburn | Director of Communications, Hajim School of Engineering & Applied Sciences

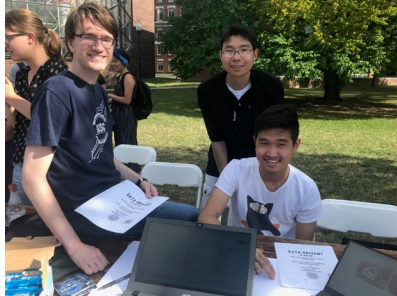December 18, 2024   SHARE   Facebook   X/Twitter   LinkedIn

FIGHTING FIRE WITH DATA: "I used to think the fire department only deals with fire-related emergencies, but they deal with so many medical emergencies and spend a lot of time early in the morning patrolling their area to look for fire hazards," says Homayra Tabassum '24 (MS) (center). "Getting to see that in person helped us be much more insightful when we were thinking about resource allocation." (Provided photo)

The students analyzed millions of data points to determine where to best place fire stations, fire trucks, and other resources.

GOERGEN INSTITUTE FOR DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

UNIVERSITY of ROCHESTER

Resources - Activities

National Student Data Corp

Women and Minorities in Computing

DandyHacks Hackathon
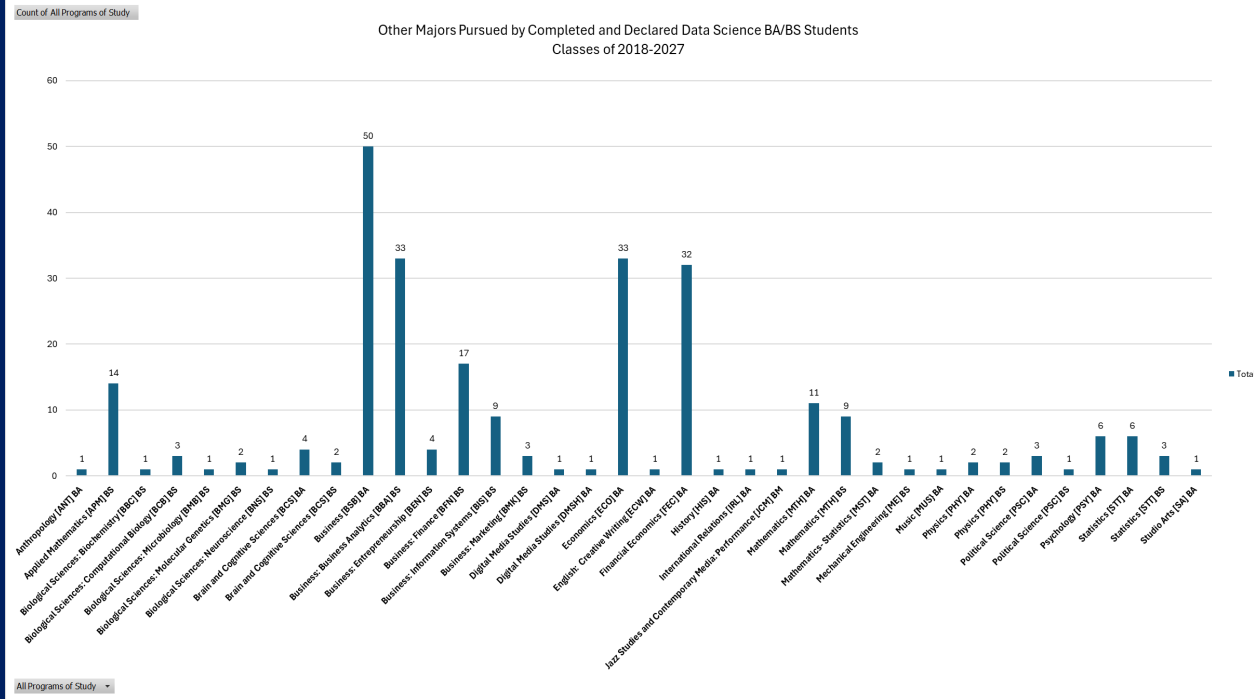

Sports Analytics Club

Society of Asian Scientists & Engineers

Dual Majors

You are allowed 3 overlapping courses between 2 majors.

128 credits for 2 BA's;
136 credits for BA+BS or 2 BS's

Other Majors Pursued by Completed and Declared Data Science BA/BS Students
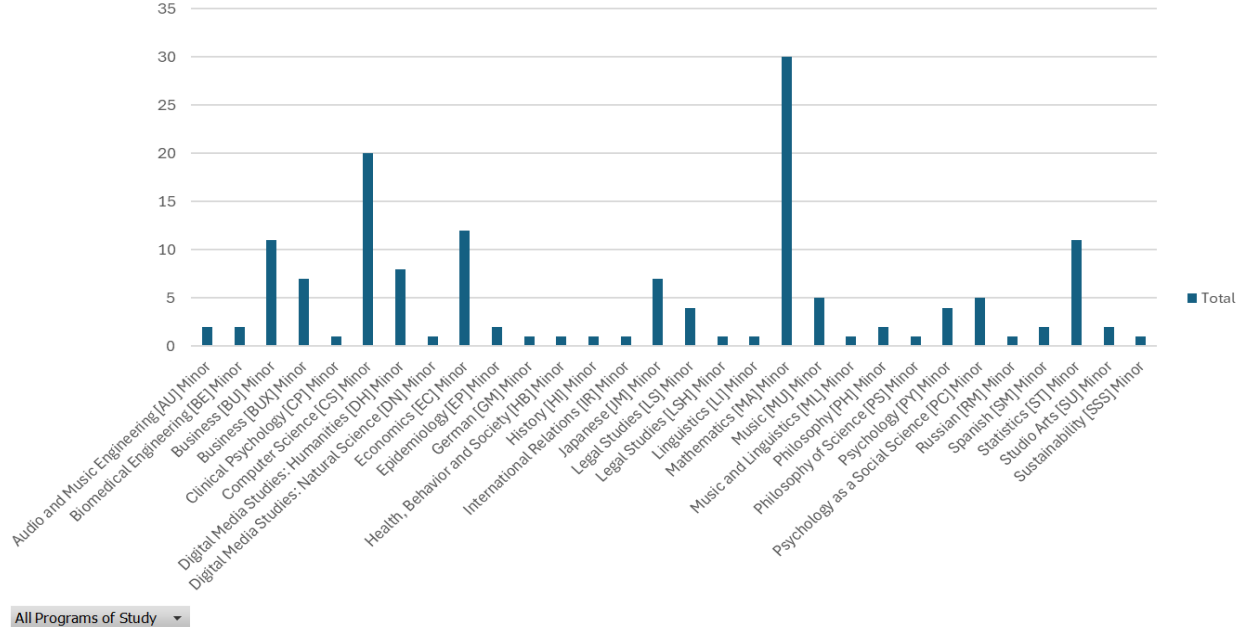Classes of 2018-2027

You can't dual major in CSC and DSCC but you can do a CS minor with just two more courses.

Minors

1) You are allowed 2 overlapping courses between a major and a minor.
2) You can do a Math Minor with just one additional course.
3) You can do a CS minor with just two more courses.

Count of All Programs of Study

Other Minors Pursued by Completed and Declared Data Science BA/BS students
Classes of 2018-2027

All Programs of Study

Minors

1) You are allowed 2 overlapping courses between a major and a minor.
2) You can do a Math Minor with just one additional course.
3) You can do a CS minor with just two more courses.

Count of All Programs of Study

Other Minors Pursued by Completed and Declared Data Science BA/BS students Classes of 2018-2027
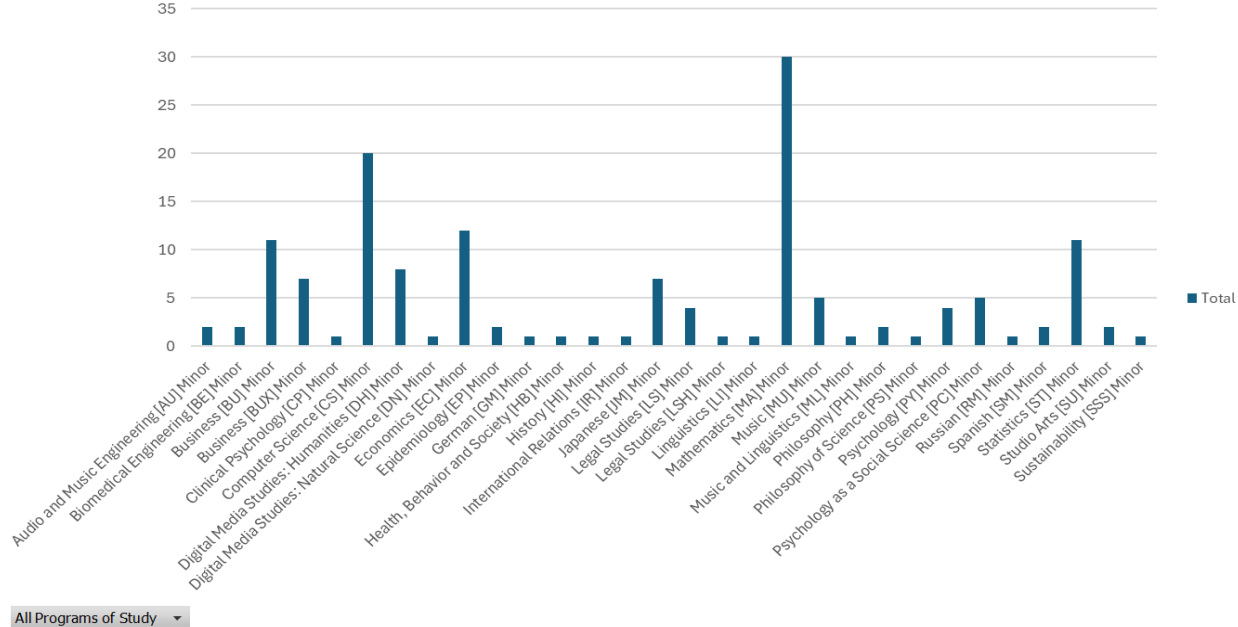
All Programs of Study

SS Clusters pursued by Data Science Bachelors

Advanced Applied Economics [S1ECO004] Cluster

Advanced Macroeconomics [S1ECO008] Cluster

America and the World [S1PSC018] Cluster

American History [S1HIS008] Cluster

American Politics and Policy [S1PSC005] Cluster

Anthropology of Globalization [S1ANT005] Cluster

Applied Economics [S1ECO001] Cluster

Cluster Not Required [S1TR001] Cluster

Cultural and Intellectual History [S1HIS009] Cluster

East Asian History [S1HIS010] Cluster

Economic History [S1HIS007] Cluster

European History [S1HIS006] Cluster

Gender, Sexuality and Women's Studies [S1GSW006] Cluster

General Economics [S1ECO009] Cluster

Health, Environment, and Sustainability [S1PH003] Cluster
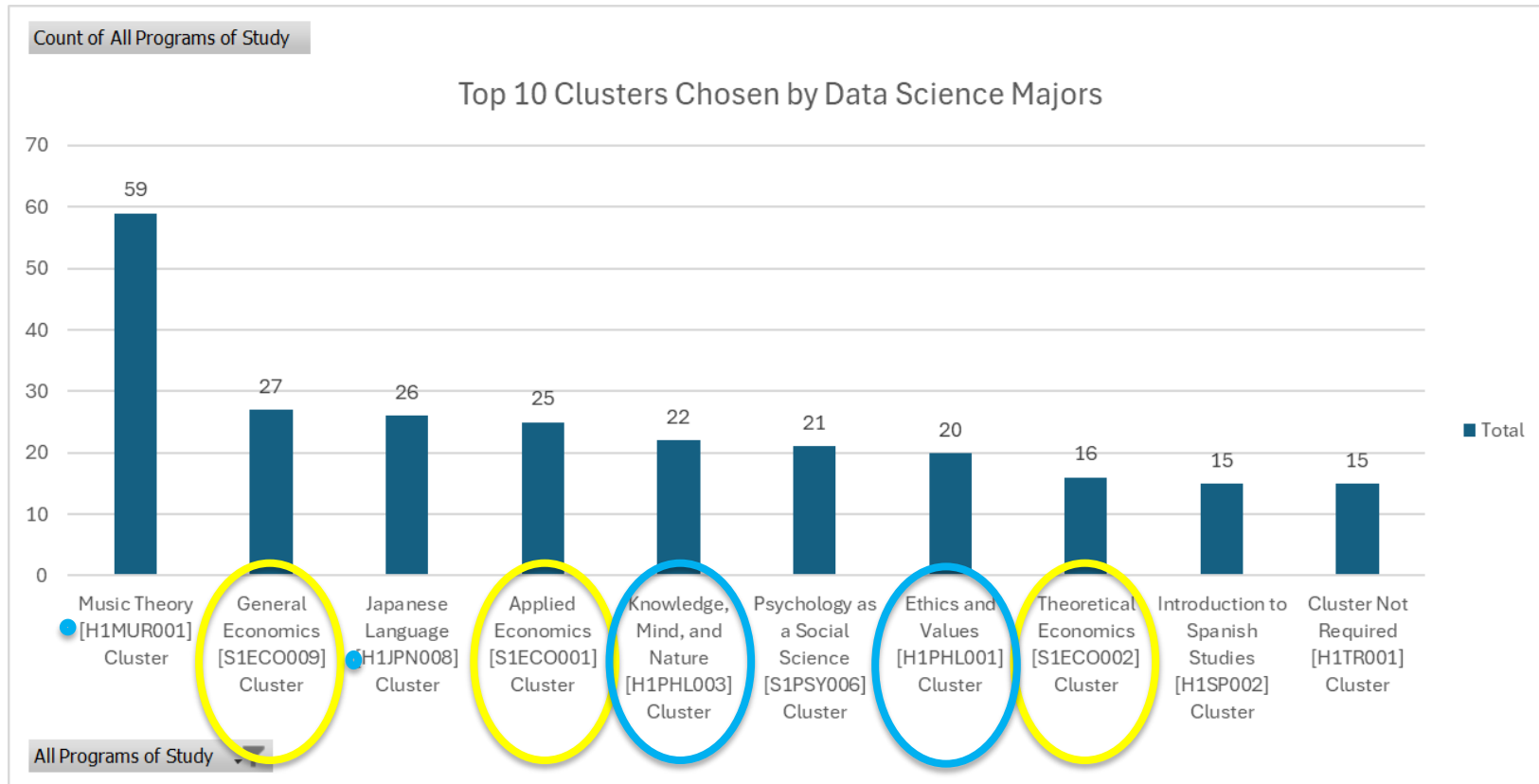
Introduction to Public Health [S1PH001] Cluster

Language and Meaning [S1LIN005] Cluster

Language in Contemporary Society [S1LIN006] Cluster

Language Structure [S1LIN004] Cluster

Legal Studies-Social Sciences [S1INT007] Cluster

Music and Linguistics for Musicians [S1MAS001] Cluster

Natural Language [S1LIN002] Cluster

Political Data and Modeling [S1PSC019] Cluster

Political Economy and Development [S1INT020] Cluster

Politics and Mathematics [S1PSC012] Cluster

Psychology as a Social Science [S1CSP006] Cluster

Psychology as a Social Science [S1PSY006] Cluster

Social History and History of Daily Life [S1HIS015] Cluster

Social Psychology [S1PSY004] Cluster

Society and Sustainability [S1SUS001] Cluster

Speech [S1LIN001] Cluster

Theoretical Economics [S1ECO002] Cluster

War, Revolution, and Society [S1HIS004] Cluster

Humanities Clusters pursued by Data Science Bachelors

Advanced Proficiency in American Sign Language [H1ASL002] Cluster

Arabic [H1REL006] Cluster

Architecture, Space, and Institutions [H1AH011] Cluster

Art and New Media [H1SA014] Cluster

Art History and Visual Culture [H1AH010] Cluster

Basic Proficiency in American Sign Language [H1ASL001] Cluster

Bioethics [H1PH001] Cluster

Chinese Language [H1CHI001] Cluster

Chinese Language and Culture [H1CHI002] Cluster

Cluster Not Required [H1TR001] Cluster

Creative Writing [H1ENG015] Cluster

Dance and Performance [H1DAN010] Cluster

East Meets West [H1REL017] Cluster

Ethics and Values [H1PHL001] Cluster

Ethics of Technology [H1PHL006] Cluster

Gender, Ethnicity, Identity [H1AH012] Cluster

Improvisation and Creative Process [H1DAN006] Cluster

Intermediate French Language and Culture [H1FR011] Cluster

International Cinemas [H1FMS012] Cluster

Introduction to Classical Music [H1MUR013] Cluster

Introduction to French Language and Culture [H1FR005] Cluster

Introduction to German Language and Culture [H1GER004] Cluster

Introduction to Spanish Studies [H1SP002] Cluster

Japanese Language [H1JPN008] Cluster

Japanese Language and Culture [H1JPN005] Cluster

Knowledge, Mind, and Nature [H1PHL003] Cluster

Korean Language [H1KOR001] Cluster

Legal Studies-Humanities [H1INT005] Cluster

Literature and Identity in Hispanic Societies [H1SP001] Cluster

Media Studies [H1FMS002] Cluster

Media, Culture, and Communication [H1ENG016] Cluster

Mind-Body Somatics [H1DAN009] Cluster

Movement and Culture [H1DAN007] Cluster

Music Theory [H1MUR001] Cluster

Music, Culture, and Understanding [H1MUR018] Cluster

Musical Styles and Ideas [H1MUR016] Cluster

Philosophy and Law [H1PHL004] Cluster

Poems, Poetry, and Poetics [H1ENG012] Cluster

Portuguese [H1POR001] Cluster

Production [H1FMS006] Cluster

Russian Language [H1RUS007] Cluster

Russian Language and Culture [H1RUS008] Cluster

Russian Studies [H1RST005] Cluster

Science and Culture [H1INT008] Cluster

Sustainability and the Environmental Humanities [H1EHU001] Cluster

The Art of Film [H1FMS001] Cluster

The Classical Tradition [H1REL012] Cluster

The Classical Tradition [H1REL020] Cluster

The Performing Musician [H1MUR011] Cluster

Theatre Production and Performance [H1ENG018] Cluster

Visual Arts and Visual Culture [H1SA013] Cluster

Visual Production [H1SA010] Cluster

Clusters pursued by Data Science Bachelors

Count of All Programs of Study

Top 10 Clusters Chosen by Data Science Majors

- Music Theory [H1MUR001] Cluster: 59
- General Economics [S1ECO009] Cluster: 27
- Japanese Language [H1JPN008] Cluster: 26
- Applied Economics [S1ECO001] Cluster: 25
- Knowledge, Mind, and Nature [H1PHL003] Cluster: 22
- Psychology as a Social Science [S1PSY006] Cluster: 21
- Ethics and Values [H1PHL001] Cluster: 20
- Theoretical Economics [S1ECO002] Cluster: 16
- Introduction to Spanish Studies [H1SP002] Cluster: 15
- Cluster Not Required [H1TR001] Cluster: 15

■ Total

All Programs of Study

UNIVERSITY of ROCHESTER

Study Abroad

Juniors, first-semester seniors and declared sophomores may study abroad

Undergraduate Research

Research

Connect with affiliated faculty to engage in research

Apply to a summer NSF REU

STEM4ALL program

Do independent study DSC 391

UNIVERSITY of ROCHESTER

A Future with a Degree in Data Science

UNIVERSITY *of* ROCHESTER

Where Do Our Students Go After They Graduate

- Ian ('20 MS) had an undergraduate degree in applied physics and mathematics before going to graduate school.
- John ('20) did a business BA with his data science BS.
- Emma ('22) took courses in business and social psychology while majoring in data science.
- Ethan ('20) also had a physics degree with his data science bachelor's degree.

UNIVERSITY of ROCHESTER

Recent Job Placements

Company	Job Title
Amazon Web Services	Enterprise Account Engineer
AT&T	Data Analyst
Bank of America	Data Analyst
Barclays	Technology Analyst, Business Analyst
BlackRock	Data Analyst
BlocPower	Data Associate
BNY Mellon	Risk Rotational Analyst
Capital One	Data Analyst
ChannelNet	Data Analyst
Corning	Data Scientist
CW Enterprise, LLC	Financial Data Analyst
Department of Defense	Data Science Development Program, Nuclear Submarine Officer
Epic	Technical Solutions Engineer

Company	Job Title
Expedia	Summer Financial Analyst
EY	Technology Risk Consultant
Goldman Sachs	Management Engineering Analyst
Google	Software Engineer, Associate Financial Analyst
Lockheed Martin	Software Engineer
Microsoft	Product Manager
National Care Dental	Software Developer
Progressive Insurance	Data Analyst
Scale AI	Software Developer
Servicenow	Business Analyst
Sunoco LP	Associate Analyst
Verizon	Lead Developer
Wells Fargo	Data Analyst, Program Analyst

BA/BS Classes of 2022, 2023, 2024

UNIVERSITY of ROCHESTER

Recent Graduate School Placements

Brown University	Master's candidate in data science
Carnegie Mellon University	Master's candidates in business intelligence and data analytics, computational data science, electrical and computer engineering, information systems management
Columbia University	Master's candidates in data science, financial engineering, operations research, statistics, biostatistics.
Cornell University	Master's candidates in operation research and information engineering, applied statistics/data science, health tech
Duke University	Master's candidate in management science and quantitative methods
Georgia Institute of Technology	Master's candidate in computer science
Harvard University	Master's candidates in biomedical informatics, computertational science and engineering, data science
Imperial College – London	Master's candidate in business analyics
Johns Hopkins University	Master's candidates in business analytics (Carey Business School)
Massachusetts Institute of Technology (MIT)	Master's candidate in business analytics
Nanyang Technological University - Singapore	Master's candidate in blockchain technology
New York University	Master's candidate in data science
Northeastern University	Master's candidate in artificial intelligence
Northwestern University	Master's candidate in machine learning/data science
Tufts University	Master's candidate in innovation and management
University of Chicago	Master's candidate in analytics, financial mathematics
University of Hong Kong	Master's candidate in financial technology
University of Southern California	Master's candidates in applied data science, business analytics, computer science
University of Pennsylvania	Master's candidates in computer and information science, data science
University of Rochester	Master's candidates in computer science, business analytics (Simon Business School), optics
Washington University at St. Louis	Master's candidate in business analytics (Olin Business School)
Yale University	Master's candidate in statistics and data science

GOERGEN INSTITUTE FOR DATA SCIENCE

BA/BS Classes of 2022, 2023, 2024

MELIORA ROCHESTER

PhD and Professional Graduate School Placements

Johns Hopkins University	PhD candidate in computer science
New York University	MBA candidate at Stern School of Business
New York University	PhD candidate in data science
Northeastern University	PhD candidate in electrical engineering and computer engineering
Stanford University	Predoctoral Research Fellow
Thomas Jefferson University - Sydney Kimmel Medical College	MS in computational medicine
University of Illinois @ Urbana-Champaign	JD candidate in law
University of North Carolina @ Chapel Hill	PhD candidate in economics
University of Southern California	PhD in Industrial and Systems Engineering
University of Tübingen	PhD candidate in neural information processing
University of Virginia	PhD in data science
William and Mary University	PhD candidate in computer science

Master's Graduate School

Master of Science in Data Science can be completed in 2-3 semesters following your bachelors degree.

Graduates with STEM degrees and/or CSC minors make great candidates!

Follow GIDS on social media

𝕏 **@UofRDataSci**

in **https://www.linkedin.com/company/goergen-institute-for-data-science/**

GOERGEN INSTITUTE FOR DATA SCIENCE

UNIVERSITY of ROCHESTER
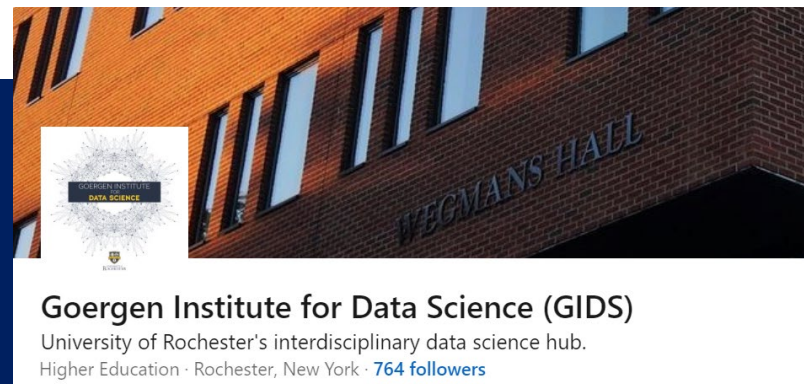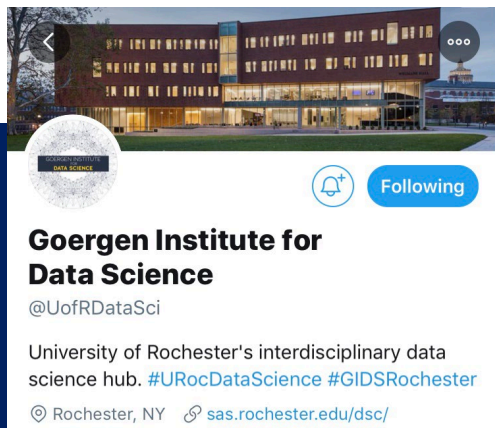
Questions?

Lisa Altman

*Data Science Education
Program Coordinator*

lisa.altman@rochester.edu

Meg Hanson

*Data Science Peer Advisor
(Class of 2025)*

mhanson@u.rochester.edu