

Math at Saint Joseph's University

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Chair of the Department of
Mathematics

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Director of Data Science
Program



Why Study Math or Data Science?

Having a strong evidence of

problem solving

abilities on your resume shows the **top career readiness competency**.

Encompasses: analytical thinking, creativity, decision-making.

Why Study Math or DSC at SJU?

- Comprehensive and engaging curriculum
- Flexibility to pursue other interests
- Opportunities for career development

Math major at a glance

Builds a **strong foundation** in a wide variety of math areas and their applications:

- Calculus 1 – 3,
- Linear Algebra,
- Fundamentals of Mathematics,
- Real Analysis, and
- Abstract Algebra.

Through our elective courses you can build up on **theoretical foundations** and explore the richness of **applied mathematics**.

An overarching **liberal arts core** complements the mathematics courses and offers you a well rounded education.

Math major at a glance

- Explore applications of mathematics in **Computer or Data Science, Physics**, and other areas.
- Interested in **Math Education**? We offer a Math+Education degree.
- Gain practical experience through **internships** or expand your knowledge by **independent research study** with our faculty.

Flexibility

Pair mathematics with other interests.

- Free electives in:

Data Science, Business, Physics, Chemistry, Engineering, Finance, Biology, Education, Pharmacy or Health Sciences.

- Program electives in:

Probability, Statistics, Number Theory, Differential Equations, Numerical Analysis, Optimization, Differential Geometry and other areas.

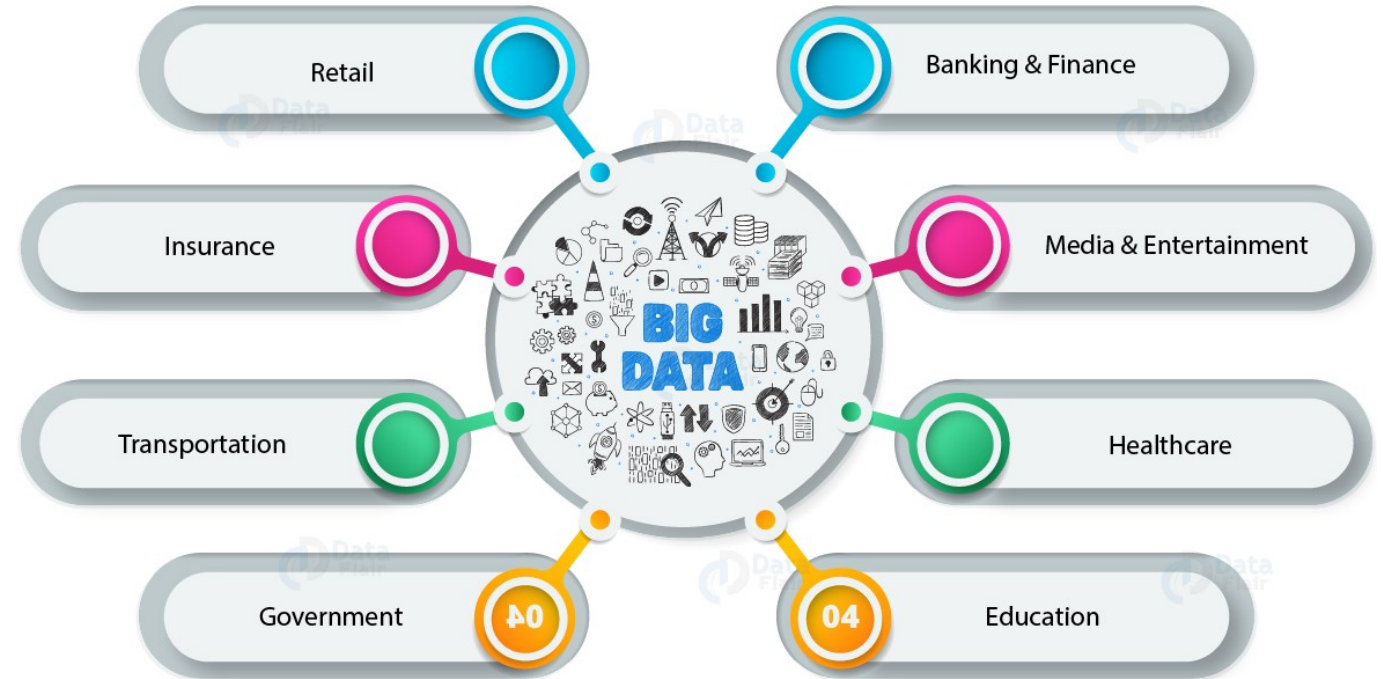
Job Opportunities

- 100% of our recent graduates are employed full time or pursuing additional education after completing the program with a median starting base salary of \$63,000.
- Our graduates have careers in industry and government (information technology, finance, insurance and national security) or have earned advanced degrees at institutions such as Penn, Princeton, Cornell, Duke, and Cambridge U.

What is Data Science?

- **Interdisciplinary field that uses**
 - **Statistics**
 - **Computer Science**
(programming, databases, machine learning, AI)
 - **Mathematic**
 - (calculus, probability, linear algebra)
- ***to extract insights from data***

Big Data is Everywhere



Whatever your passions are, there is data to be analyzed!

Data Science is a Top Career

#8 of the 25 Best Jobs of
2026 by US News and
World Report

#10 of the Best Jobs in the
US for 2026 by Indeed

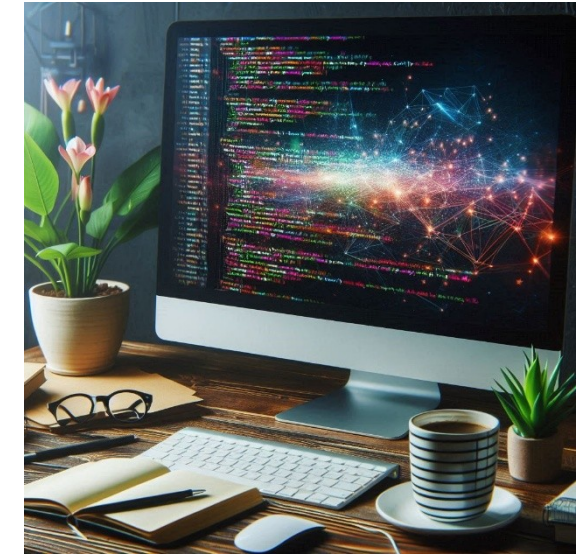
Projected Job Growth: 34%
for 2024 - 2034 (Bureau of
Labor Statistics)

(Avg growth rate for all
occupations is only 3%)



Will Data Science Jobs be Replaced by AI?

- **Data science jobs will not be entirely taken over by AI**
- **AI can automate routine tasks for Data Scientists:**
 - **Basic programming (coding)**
 - **Data cleaning and formatting raw data**
 - **Basic statistical modeling**
- **Data Scientists can then focus on:**
 - **Big picture and strategic decision-making**
 - **Business context**
 - **Ethical judgment**



Why SJU Data Science?

- **B.S. in Data Science** - Joint program of the *Depts of Math, Computer Science and Decision & System Sciences*
- Comprehensive and flexible: can be combined with other majors or minors
- SJU liberal arts core for broad educational background
- Industry Advisory Board
- More than 20 faculty experts in various areas including *Statistics, Data Analytics, Machine Learning, AI, Econometrics, Bioinformatics, Applied Math*
- Highly dedicated faculty who love to teach (several have won university teaching awards) and relatively small class sizes

Why SJU Data Science?

- Strong foundation for graduate school (Chief Data Scientist positions of many companies require a PhD)
- Opportunities to pursue research projects on data science and related topics (SJU Summer Scholars Program).
- Participate in the Basketball Analytics project with SJU Basketball.
- Some research projects have led to publications at national or international conferences or journals.



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Mathematics

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Accelerated Random Search for constrained global optimization assisted by Radial Basis Function surrogates

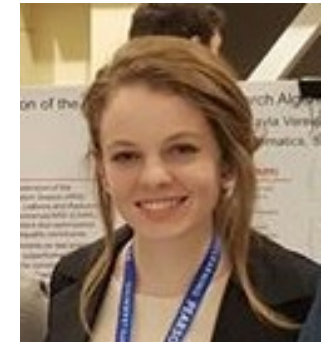
Luigi Nuñez ^a, Rommel G. Regis ^a ✉, Kayla Varela ^b

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<https://doi.org/10.1016/j.cam.2018.02.017>

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Data Science Major Requirements

- SJU Data Science Major was patterned from some of the top Data Science programs in the country

- **DSC 223 Intro to Math of Data Science**
- **DSC 325 Essentials of Data Science**
- **DSC 326 Advanced Data Science**

- **MAT 161 Calculus I**
 - **MAT 162 Calculus II**
 - **MAT 213 Calculus III**
 - **MAT 226 Intro to Linear Algebra**
 - **MAT 321 Probability**
- Applied
Math
Courses

- **Statistics or Applied Math Elective**

- **Note: The use of AI is being integrated into some of our courses.**

- **CSC 115 Intro to Computer Science (Python programming)**
- **CSC 120 Computer Science I (Java)**
- **CSC 351 Database Management Systems**
- **CSC 362 Artificial Intelligence**
- **DSS 415 Data Wrangling & Visualization**
- **DSS 445 R Statistical Programming Lang**
- **MAT/CSC 290 Career Prep Seminar**
- **Three Data Science Electives (from many departments across campus)**
- **DSC 225 Data Science for Sports**
- **MAT 313 Mathematical Optimization**
- **DSC 424 Intro to Data Mining**
- **CSC 330 Generative AI**

INTERNSHIPS

- Complete internships for credit during the summer or during the academic year, on or off campus
- Paid or unpaid; grant funding available for unpaid internships in the summer
- SJU's Career Center helps students locate, prepare for, and make the most of their internships!



Job/Internship Outcomes for Data Science and Math Students

● **Companies that have offered Data Science/Statistics jobs/internships to our students:**

- **Merck**
- **Vanguard**
- **Lockheed Martin**
- **Comcast**
- **SAP**
- **AT&T**
- **IQVIA**
- **Susquehanna International Group**
- **Philadelphia Phillies**

- **Johnson & Johnson**
- **Chubb Insurance**
- **Willis Towers Watson**
- **Guardian Life Insurance**
- **ConcertAI**
- **Fors Marsh Group**
- **Verisk Analytics**
- **Tourmo (AI company)**
- **US Census Bureau**
- **Naval Surface Warfare Center**
- **Federal Reserve Bank of Philadelphia**
- **Population Services International**

We provide some help in identifying suitable job and internship opportunities.


Student Research Outcomes

SJU Summer Scholars Program 2024

Using a Deep Learning Neural Network to Automatically Calculate Exit Velocities of Baseballs from Video Footage

Nicolas Zywalewski '26, Data Science & Mathematics

Faculty Mentor: Dr. Abolfazl Saghafi, Mathematics



06 Model Deployment

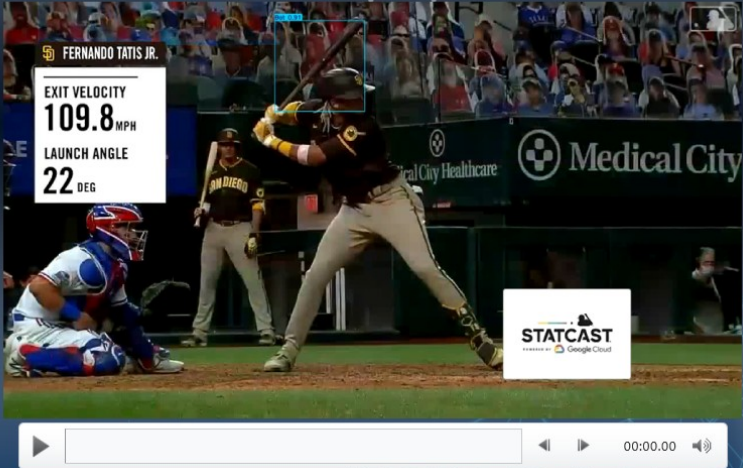
Tracking Speed:
1045.570916 pixels/second

Estimated Distance Conversion:
 ≈ 0.0002994541145 miles/pixel

Estimated Exit Velocity:
112.716 mph

True Exit Velocity (from mlb.com):
112.1 mph

Error:
-0.616 mph





CAREER READINESS COMPETENCIES

The SJU Curriculum and that of the Math and Data Science Programs provides our students with career readiness competencies.



Career and Self Development



Critical Thinking



Leadership



Teamwork & Collaboration



Oral & Written Communication Skills



Digital Technology



Equity and Inclusion



Professionalism

SJU Mathematics Students at Work



Aubrey Diehl
Math + CSC

Investment
Risk Executive
at the
**Macquarie
Group**



Alana Simrell
Math
Client Service and
Technology
Associate
**Bender Private
Wealth
Management
Group**



Nicole Angelini
Math

Master's in Data
Science at
**Stevens Institute of
Technology**



Jenna Iorio
Math

Master's in Business
Analytics
Columbia University



Nolan Rau
Math Education

Assistant Manager
**National Museum of
Mathematics
Manhattan**

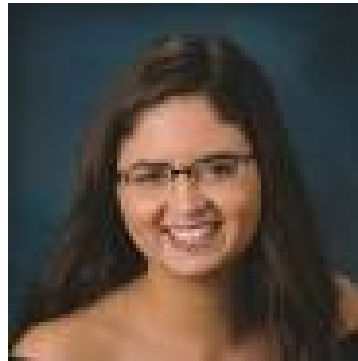
DSC students at Work



Kayla Varela
US Census Bureau



Luigi Nunez
Population Services International



Lenessa DeFrank
Merck



Christina Conte
Vanguard



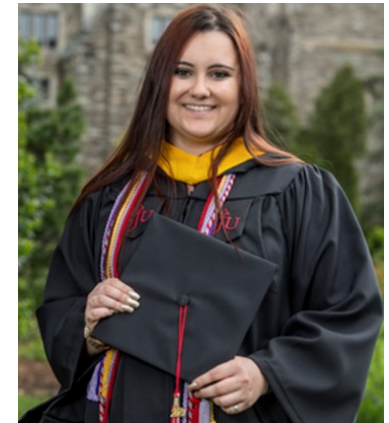
Nick Zywalewski
Johnson & Johnson



Suzanne Picciano
Lockheed Martin



Nick Mandarano
Ph.D. student Biostatistics
Ohio State University



Michelle Wheatley
Naval Surface Warfare Center

Welcome to the Department of Mathematics

