



Goodsell Gazette

Carleton College
Northfield, MN 55057

The newsletter for the Carleton mathematics and statistics community

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Math/Stats in the Movies

Looking for a movie to watch over the upcoming midterm break? Consider one that features a math or stats theme! Here are some contenders (in no particular order):

1. Good Will Hunting (1997, Matt Damon as a self-taught math genius)
2. Magic Town (1947, about an opinion pollster who discovers a town that statistically mirrors the entire United States)
3. Proof (2005, Gwyneth Paltrow plays the daughter of a recently deceased brilliant mathematician)
4. A Beautiful Mind (2001, about John Nash)
5. Stand and Deliver (1988, about real-life math teacher Jaime Escalante).
6. 21 (2008, about 6 MIT students learning to count cards to win in Las Vegas)
7. Agora (2009, Spanish, about Hypatia)
8. Moneyball (2011, baseball stats!)
9. The Imitation Game (2014, about Alan Turning)
10. The Man Who Knew Infinity (2015, about Ramanujan)
11. Hidden Figures (2016, about the black female mathematicians at NASA).
12. Gifted (2017, single father raising a 7 year old mathematical prodigy)

Job, Internship, & Other Opportunities

University of Minnesota MS Financial Math

The Master of Financial Mathematics (MFM) is a professional MS program and a great way for STEM students to deepen their quantitative skills and prepare to land jobs in the domains of quantitative finance and data science. It is a highly mathematical program that centers on financial modeling using mathematics, statistics, and coding to solve various problems in the domain of Finance. The skills students obtain in the program are also a great fit for the field of data science.

Find more details and apply by June 1 at cse.umn.edu/mcfam/master-financial-mathematics-mfm.

Real Estate Financial Analyst Intern - Change All Souls Housing Corporation (CASHC)

Application deadline: May 15, applications are being reviewed on a rolling basis

This opportunity is brought to us by a Carleton parent, Terry Green P'11 (tgreen@cashousingdc.org). You are welcome to reach out to Terry with any questions regarding the organization or the position prior to applying.

Change All Souls Housing Corporation (CASHC) is hiring a paid Real Estate Financial Analyst Intern for the summer. The position will be located in CASHC's office in Columbia Heights in Washington, DC, or could be remote. The intern will focus on an analysis of the displacement and gentrification that is taking place in the Columbia Heights Neighborhood using Census and other available data.

Find full description and apply at app.joinhandshake.com/stu/jobs/6339178.

Summer Analyst Intern - Decryption Capital

This opportunity is brought to you by a Carleton alum, Zhe Yang '11 (zhe@decryptioncapital.com) You are highly encouraged to reach out to Zhe with any questions regarding the organization or the position prior to applying.

Decryption Capital is a private fund manager that offers alternative investment solutions, with a focus on digital assets and blockchain technology.

They are hiring a summer analyst intern to work in Chicago or remotely. You will be working closely with Portfolio Manager to generate, research, and implement investment ideas. You will be helping develop marketing materials for events and client meetings. You are also expected to perform ad hoc duties as needed.

Apply via Handshake by May 1 at carleton.joinhandshake.com/stu/jobs/6359372.

Investment Analyst - Swift Real Estate Partners

This opportunity is brought to you by a Carleton alumnus, Sam Birnbaum '09. You are welcome to reach out to Sam at birnbaum@swiftrp.com with any questions about the organization or position prior to applying.

Swift Real Estate Partners is pleased to announce an exciting opening for an Investment Analyst to join our Investments team at our corporate headquarters in San Francisco, CA. In Swift's fast-paced environment, you will be involved with acquisitions, asset management, financial analysis, and fund-level strategy. This is a dynamic position in an entrepreneurial and thriving environment that embraces diversity and inclusion.

Apply via Handshake by June 1: carleton.joinhandshake.com/stu/jobs/6357923.

Problems of the Fortnight

To be acknowledged in the next *Gazette*, solutions to these problems should reach me by noon on Tuesday, May 3 (the day after midterm break).

1. The small prairie town of Wohascum Center is laid out as a rectangle subdivided by a square grid, with equally spaced north-south streets and east-west avenues forming blocks that are perfect squares. A long-time resident has found that there are exactly 792 ways to bicycle from the extreme northwest corner of town (where she lives at the corner of First Street and First Avenue) to the intersection at the extreme southeast corner (where she works) efficiently, that is, by heading either east or south to begin with and also at each subsequent intersection. However, now that the snow is gone, construction has started on all four sides of the central block of the town, and so she wants to avoid bicycling along any side of that block (although she is willing to pass through an intersection at the corner of the block). Under that additional constraint, how many ways to bicycle to work efficiently does she have left?

2. Consider the 2022×2022 matrix $A = \begin{pmatrix} 0 & e^{-1} & e^{-2} & e^{-3} & \dots & e^{-2021} \\ e & 0 & e^{-1} & e^{-2} & \dots & e^{-2020} \\ e^2 & e & 0 & e^{-1} & \dots & e^{-2019} \\ e^3 & e^2 & e & 0 & \dots & e^{-2018} \\ \vdots & \vdots & \vdots & \vdots & \dots & \vdots \\ e^{2021} & e^{2020} & e^{2019} & e^{2018} & \dots & 0 \end{pmatrix}$

whose i, j entry is 0 if $i = j$ and e^{i-j} if $i \neq j$. Find $\det(A)$.

So far, no solutions to the problems posed April 8 have come in. Where are you, problem solvers?

- Mark Krusemeyer



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