Goodsell Gazette

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Prof. Egge wins MAA-NCS Teaching Award

Our own Eric Egge is the recipient of the 2020 MAA-NCS Award for Distinguished College or University Teaching of Mathematics. As the award citation states, "both Eric's colleagues and students describe his classes as welcoming, challenging and humorous. They praise his ability to invite students to ask and answer deep mathematical questions and credit Eric with helping to create a welcoming, participatory and inclusive atmosphere for student research in mathematics at Carleton." Congratulations to Eric!

Work in the Math and Stats Department Next Year!

Are you interested in getting involved in the Mathematics and Statistics Department next year? We are looking for course graders and lab assistants, as well as tutors for the Math Skills Center. Applications are due by 5pm on April 30. For more information and to apply, visit www.carleton.edu/math/resources/.

Sad News from Calgary and Princeton

Since the last Gazette appeared in early March, two eminent mathematicians, each with some connection to Carleton, have passed away. Richard Guy, who visited Carleton in 1995, died in Calgary at the age of 103; until very recently, he was still to be found in his university office on just about every weekday, doing active mathematical research. About a week ago, John Conway, who gave the Chesley lecture at Carleton in 2004, died in Princeton at age 82, a victim of the COVID-19 coronavirus.

Both Conway and Guy had wide mathematical interests, which you can get an idea of by looking up their Wikipedia articles, and they worked together on a variety of problems. In particular, their names are linked in the context of combinatorial game theory, a relatively new (and playful) area of mathematics to which they made great contributions. Arguably the field was established by the publication of Conway's book "On Numbers and Games" in 1975, followed by the multi-volume work "Winning Ways For Your Mathematical Plays" by Elwyn Berlekamp (who passed away last year), Conway, and Guy. If you've never seen "Winning Ways," you should (it is now available in paperback, in four volumes); it's a unique blend of tables, figures, serious mathematics, outrageous puns, and what have you, both very challenging and highly entertaining, in three colors plus basic black. (The colors are needed for a particular game.)

Job, Internship, & Other Opportunities

Redistricting Data Hub - Data Fellow

The nonpartisan Redistricting Data Hub is working to coordinate and accelerate redistricting data collection efforts at universities around the country, to make sure that all the necessary data is widely available. We are working with redistricting mapping software developers to reduce the cost and increase access to these critical tools. And we are developing training and educational resources to make sure that everyone knows why redistricting matters and how to use the data and tools we're providing.

We are currently hiring for a summer Redistricting Data Fellow. The position is paid ($15/hr) and fully remote. Applications for both part- or full-time work will be considered. We anticipate this being a 12 week position, running from May-August, but exact start and end date are flexible. The responsibilities will include basic to advanced data munging, writing & running data QA scripts, ad hoc research (quantitative or qualitative), and more advanced individual projects, depending on ability and interest. Prior computer programming and data analysis experience are strongly preferred.

To apply, send an email to kristina@haystaqdna.com with the subject line "Redistricting Data Fellow Application - Summer 2020." Include:
- Resume
- 2 references (academic or professional)
- Short essay (200 words max) describing what you don't know but want to learn about redistricting data
- Part- or full-time preference, if any
- Start & end date preference, if any.

The deadline to apply is 5pm Eastern Time on April 24.

US Equal Employment Opportunity Commission Office of Enterprise Data and Analytics

The Office of Enterprise Data and Analytics at the US Equal Employment Opportunity Commission is expanding! We are seeking 6 advanced entry level statisticians/data scientists. These vacancies are open to Recent Graduates - including Bachelor, Master, and Doctoral degree candidates for Spring 2020. The degree does not need to be in statistics to qualify. These positions are ideal for social science, data science, business analytics, mathematics, and operations research majors, among others. These positions are also great for individuals interested in social determinants of health, as the work of the agency focuses on discrimination and employment. Closing date is April 17, 2020, or when we have received 150 applications. Please apply today!

Three of the positions available are in the Data Development and Information Products Division, with details at https://www.usajobs.gov/GetJob/ViewDetails/564405800 and three in the Data Analytics Division, details at https://www.usajobs.gov/GetJob/ViewDetails/564405600.

University of Chicago Booth School of Business - Full-Time Research Assistant

Professor Constantine Yannelis seeks one full-time Research Professionals for a period of at least one year but ideally two years. Research Professionals work with faculty to collect data, maintain databases, conduct statistical analysis, and provide other support associated with faculty research. The ideal candidate will have: (i) a Bachelor's degree or higher in a field relevant to the research being conducted by the start date (concentration in Economics, CS, Math or Statistics preferred), (ii) a minimum of one

year of relevant research experience (experience gained in school counts), (iii) experience with Stata or another statistical package such as SAS, R, or SPSS. Background in economics or finance is a plus, but not necessary---candidates with strong technical backgrounds and writing skills who are looking for more exposure to economics are welcome to apply.

The preferred start date is August 1, 2020, though other dates may be considered. Applications will be evaluated on a rolling basis, but all applications submitted by April 20, 2020, will be given full consideration. If interested please fill out a brief survey at https://forms.gle/uGubx7hJiCg4jFEHA. You must also fill out a formal application at https://uchicago.wd5.myworkdayjobs.com/External/job/Hyde-Park-Campus/Research-Professional_JR08232. Please submit all ancillary materials (resume, cover letter, postsecondary transcripts (unofficial are fine) in the Resume/CV field. You may upload multiple files.

Google - Research Intern

Research happens across Google everyday, in many different teams. Our research has already impacted user-facing services across Google including Search, Maps and Google Now, and is central to the success of Google Cloud and our planet-scale computing, storage, and networking infrastructure. Research Interns and Software Engineers work on challenges in artificial intelligence, machine perception, data mining, machine learning, natural language understanding, privacy, computer architecture, networking, operating systems, storage and data management, and much more. Apply at carleton-csm.symplicity.com/students/app/jobs/detail/1a1eb380ab1d7b8dea74099be5b8821f.

Problems of the Fortnight

Despite (or maybe even because of) all the disruptions due to the "novel coronavirus", you may enjoy having some problems as usual. At least for the time being, we are also staying on the usual schedule (after the delay caused by the late start to this on-line term). In particular, to be acknowledged in the next *Gazette*, solutions to the problems below should reach me by noon on Tuesday, April 28.

1. Consider an infinite "chessboard" stretching up and to the right from a square in the lower left-hand corner. (If you like, start with an ordinary chessboard and extend it indefinitely beyond its top and right edges.) Let m and n be positive integers. Define a "piece" called an m, n-gnight (short for "generalized knight", not for "good night") which, at every move, moves m squares in one "coordinate" direction (right, left, up, or down) and n squares in a perpendicular direction simultaneously. (If the gnight is on a square that is not too close to an edge of the board, it will have 8 possible moves from that square, unless $m = n$, in which case it will have 4 possible moves. A $2, 1$-gnight is just an ordinary knight, as in chess. A $1, 1$-gnight can make exactly those moves which are legal moves in chess for both a bishop and a king.) Find (and prove) a necessary and sufficient condition on m and n so that an m, n-gnight can reach *any* square on the board by a series of moves starting from the corner square.

2. Find all continuous functions f, defined on all of $\mathbb{R}$, such that

$$\int_a^{20a} f(x)\,dx = a^{2020}$$

for all $a \in \mathbb{R}$.

March 6, when the previous two problems were posted, seems like an eternity ago, because things were so different then, and in checking what solutions had arrived, I scanned more than a thousand e-mails - so I may have missed something; if so, I do apologize, and I hope you'll point it out. Meanwhile, I'm happy to report that John Snyder (in Oconomowoc) solved both problems. Because we're now all so spread out, if you do submit a solution, why not include some "local color"? To get that started, you may be interested in knowing that as I type this, on Easter Sunday, Northfield is experiencing a substantial snowstorm. But by the time you read this, surely it will all have melted again!

- Mark Krusemeyer

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