Math Colloquium on TUESDAY!

A recent Kaggle data science competition posed the question: *Can users of cell phones be distinguished, simply by how they hold their phone?* To do this, we apply a number of machine learning algorithms that are designed to learn from the individual's behavior by automatically building and refining the algorithm over time. **Dr. Ryan Jones**, Visiting Assistant Professor of Mathematics, will discuss one approach to this problem, while also highlighting some of the more fascinating algorithms in use. Please make time in your schedule to attend this interesting talk.

"Machine Learning:
An Application to Cell Phone Security"

Date: **Tuesday, January 21st**
Time: 4:00
Place: SAC 113

Refreshments at 3:50

Important Dates for Seniors

A attention all seniors! Please be aware of the following dates.

January 24: Topic of your presentation is due.

February 11: MFAT test – 1st opportunity.

February 12: MFAT test – 2nd opportunity.

March 7: Your paper is due.

March 11: Presentations begin @ 4:00

March 18: Senior dinner @ 5:30

Magic Numbers

Humans have a massive array of numbers at their disposal. Fractions, decimals, integers, and irrational numbers offer a myriad of possibilities for quantifying, measuring, and interacting with facets of our world. Nothing about any of these values makes one inherently better than another; π may possess a remarkable number of properties, but it is hardly superior to 5, 209, or $\sqrt{7}$. Our subconscious, however, would disagree. In his *New York Times* article, Harvard psychology professor Daniel Gilbert explores our underlying preferences when it comes to numbers and, perhaps more importantly, the way these preferences produce consequences both big and small.

It is not particularly surprising that we play favorites when it comes to numbers. Some are simply easier to use than others. It is clear why numbers such as 10 and 5 would gain favor: we have five fingers on a hand and counting by 5's or 10's both fall into easy, predictable patterns. Other preferences are tied to units of time. Why do pill bottles divide safe dosages into 24 hour time periods rather than 23 or 25 hour periods? Why, because 24 hours conveniently makes a day. 7 days in a week, 24 hours in a day, and 12 months in a year all make these numbers easy to work with.

These preferences may seem harmless, but Gilbert explores the unintended consequences our preference for magic numbers such as 7 or 10 can have on healthcare costs, the stock market, and your own wallet, a testament to the attractive and psychological power numbers can wield on our subconscious.

Read the full article at ***http://nyti.ms/1dCruPN***

Katie Krauss

Major Field Achievement Test (MFAT)

All math and computer science majors are required to take the MFAT in their respective areas. The exams, created by Educational Testing Service, provide students with a measure of their level of achievement within their field of study compared to students (majoring in that same area) from other colleges and universities. In addition, academic departments use the MFAT to evaluate their curricula and to measure the progress of their students. The exams will be given (on campus) on **February 11th** and **12th**. Please see **Sheila Boyer** in the CSO Office to register for the exam. The fee for the exam will be paid by the Department of Math & C.S.

The Math Club

The Math Club meets **EVERY WEDNESDAY at 9:15 pm** in the Wright Hall lobby.

Everyone is invited!

Solution to Previous Problem

A portion of the graph of a continuous, nonnegative function $y = f(x)$ is shown below, where $f(0) = 0$ and $f(\frac{1}{n}) = 0$ for each integer n. If the graph of $y = f(x)$ between $x = \frac{1}{n+1}$ and $x = \frac{1}{n}$ is an isosceles triangle of height 1 for each positive integer n, then what's the value of $\int_0^1 f(x)dx$.
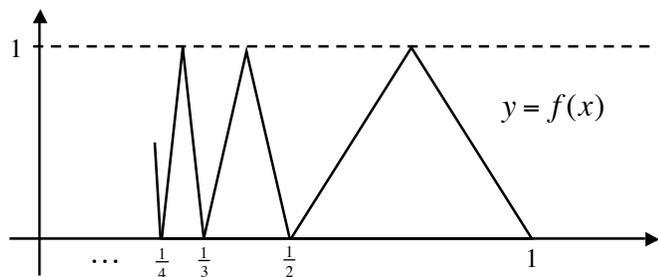
Several students and professors submitted correct solutions to the problem, but **Jake Brower** was the first student to do so. So, he's the prize winner. By the way, the $\int_0^1 f(x)dx = \frac{1}{2}$.

Recall that this problem was one of the practice problems for the MFAT exam in mathematics. If you'd like to take a look at other practice problems, visit the Educational Testing Service website at www.ets.org/mft .

Puzzle of the Bi-week

A set of consecutive positive integers beginning with 1 is written on a blackboard. One number is erased. The average (arithmetic mean) of the remaining numbers is $35\frac{7}{17}$. What number was erased?

$$1,\ 2,\ 3,\ 4,\ 5, \ldots , x\text{-}1,\quad x,\quad x\text{+}1, \ldots , n$$

A prize of **$2.00** will be awarded to the FIRST student who submits a correct solution to Prof. Sipka.

Student assistant:	Katie Krauss
Faculty advisor:	Tim Sipka
Distribution:	Deb Smith

If you would like to submit an announcement or a short article, please send it via e-mail to Tim Sipka (sipka@alma.edu).