



Pi Mu Epsilon MATH MATTERS



Wed., April 17, Noon
Kettler 216

Some Thoughts on Proofs Ian Lehman

My talk will be about proofs – the notion of a proof, what a proof is, and what a proof means to us as mathematicians. This will be demonstrated with a simple proof from group theory. Depending on time, Gödel's Incompleteness Theorem may be mentioned.

The Exponential Eiffel Tower Bradley Crowe

The Eiffel Tower in Paris stands as one of the truly iconic structures in the world. Unfortunately, the chief engineer preserved no detailed structural analysis. Recent investigations of his notes suggest that his primary concern was to protect the free-standing structure from wind loading. The center of mass is a major component of an object's ability to withstand the effects of wind. Our analysis uses exponential functions in an attempt to model the center of mass of the tower.

Simpson's Paradox in Statistical Inferences Nguyen Nguyen

Aggregated data provide a convenient overview when studying a data set, but drawing conclusions solely based on it is dangerous. A probability phenomenon called Simpson's Paradox is observed when aggregated and separated data suggest contradicting conclusions. After illustrating this phenomenon, we will discuss necessary conditions for it to occur and some methods for addressing it.

Quantifying Buying Patterns Using the Generalized Additive Model Xiao Yuan

The generalized additive model (GAM) has application in many areas. Compared to a linear model, GAM is more flexible but can still be interpreted very easily. In our study, the customer buying patterns from transactions with certain companies between 1997 and 2009 are investigated and the effects of predictors are identified to help companies make better marketing decisions.

Forecasting Alaska Salmon Migration Timing with Machine Learning Bryan Melchert

Commercial fishing in the Bristol Bay area of Alaska is a \$1.5 billion enterprise, and the public release of sockeye salmon has centered on predicting abundance. However, the fishery is prone to condensed migration timeframes, which places considerable pressure on planning by regional fishery managers, on fish processing companies allocating resources, and on fishermen deciding when and where to fish. The purpose of this research is to use modern machine learning and data science methods to predict the availability of salmon more accurately.

All are Welcome!

Refreshments following the talks