Stanford University
Department of Statistics

DEPARTMENTAL SEMINAR

4:15pm, Tuesday, July 9, 2013
Sequoia Hall Room 200
Cookies served at 3:45pm, 1st Floor Lounge.

Speaker:  Boaz Nadler, Weizmann Institute of Science

Title:  Continuous goodness of fit testing:
Old problem, (some) new ideas

Abstract:

In this talk we consider continuous goodness of fit testing — one of the most fundamental and classical hypothesis testing problems in statistics. Given $n$ iid observations, $x_1, \ldots, x_n$, the goodness of fit problem is to assess whether the data comes from a known continuous density $p(x)$.

By far, the most popular goodness of fit test is the Kolmogorov–Smirnov (KS) test, which, unfortunately, lacks power at the tails of the distribution. In this talk we will take a closer look at the KS test and propose a novel test statistic, denoted the Calibrated KS test, which enjoys detection power throughout the entire range of $X$. Furthermore we derive a computationally efficient method to compute its $p$-values, also applicable to KS and other similar test statistics.

Finally, we will present some relations between our test statistic and previous suggestions such as the Higher Criticism test, the Berk–Jones test and more.

This is joint work with Amit Moscovich Eiger (WIS) and with Clifford Spiegelman (Texas A&M).