Class 6

Dynamic Randomness: The Poisson Process
(Scaling and Centering of Data (Statistical Regularity))

Dynamic Randomness: the Poisson Process

- Empirical Introduction, via DataMOCCA.

- The Poisson Process: 4 Definitions, Properties.

    - PASTA = Poisson Arrivals See Time Averages.
    - Biased Sampling.

- Animation: from Bernoulli to Poisson, or The Law of Rare Events.

- Non-homogeneous Poisson Processes.

- Testing: Poisson or not Poisson.

- Modeling Arrivals to a Service Station.

- Forecasting of the Arrival Rate.

- Beyond Poisson: eg. Internet Applications.

Scaling and Centering of Data, within the framework of Levy Processes

- Random Walks: leading to Brownian Motions (CLT), Poisson Processes (Rare Events).

- The Invariance Principle (Donsker's Theorem).

- Mathematical Framework: Levy Processes;
  The Axiomatic Approach (Poisson, Compound Poisson, Brownian Motion).

- Beyond second moments: Stable Processes.

Recitation 6: SEEStat.

HW 6:, "SEEStat".