



Seminar Series in Statistics and Data Science

27.10.2020, 14:15 @ Zoom (ID: 625 0462 8503)

Benjamin Kedem: Tail Estimation by Statistical Data Fusion

Abstract: “Replacing the real world with a virtual one is a neat trick. Combining the two could be more useful.” *The Economist*, February 4th 2017.

That is, at times augmented reality is “better than real”, a case in point is the estimation of small tail probabilities.

Often, it is required to estimate the probability that a quantity such as mercury, lead, toxicity level, plutonium, temperature, rainfall, residential radon, wind speed, risk, etc., exceeds an unsafe high threshold. The probability in question is then very small. To estimate such a probability, we need information about large values of the quantity of interest. However, in many cases, the data only contain values far below the designated threshold, let alone exceedingly large values, which ostensibly renders the problem insolvable. It is shown that by repeated fusion of the data with externally generated random data, that is, repeated augmented reality, more information about small tail probabilities is obtained. In many cases this provides surprisingly precise estimates.

We shall first review briefly the density ratio model and some of its basic underpinnings.



Benjamin Kedem

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Benjamin Kedem is a Professor and Director of the STAT Program, Department of Mathematics, University of Maryland, College Park. He received a PhD in statistics from Carnegie-Mellon University in 1973. Broadly speaking, his research deals with time series analysis, generalized linear models, semiparametric statistical inference, and data fusion. At present he is working on applications of augmented reality in the estimation of very small tail probabilities.

Honors and Awards:

1986, HOC selected as an accomplishment, AFOSR.
1988, IEEE Baker Award.
1997, NASA/Goddard Award in connection with TRMM.
1999, ASA Fellow.
2006, IBM Faculty Award.
2013, Fulbright Specialist.

Next seminar

10.11.2020 @ 14:15 **Steffen Grønneberg**
BI Norwegian Business School

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