SMU Department of Mechanical Engineering

SEMINAR

"A linear programming approach to predicting adverse events in clinical trials"

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Abstract: We study the problem of predicting the probability of adverse events in clinical trials. Drugs often fail during clinical trials owing to the variation of physiological parameters across a population of patients. Failures of drugs during clinical trials are enormously expensive, so it is desirable to make quantitative predictions of the probability of failure. At present, this is attempted by trying to fit a probability distribution to the observed physiological parameters. However, in early stages of clinical trials, there is never sufficient data to achieve a good fit. In the proposed approach, we circumvent this problem by avoiding the need to fit the data. Instead we formulate the problem of predicting the probability of failure as a linear programming problem.

Bio: He was born in Guntur, India on September 29, 1947. He received the B.S., M.S. and Ph.D. degrees in electrical engineering from the University of Wisconsin in Madison, in 1965, 1967 and 1969 respectively. Between 1969 and 1989, he was a Professor of Electrical Engineering at various universities in the USA and Canada. His last overseas job was with the University of Waterloo, Waterloo, ON, Canada, where he served between 1980 and 1989. In 1989 he returned to India as the Director of the newly created Centre for Artificial Intelligence and Robotics (CAIR) in Bangalore, under the Ministry of Defense, Government of India. Between 1989 and 2000, he built up CAIR into a leading research laboratory with about 40 scientists and a total of about 85 persons, working in areas such as flight control, robotics, neural networks, and image processing. In 2000 he moved to the Indian private sector as an Executive Vice President of India's largest software company, Tata Consultancy Services. In the city of Hyderabad, he created the Advanced Technology Center, an industrial R&D laboratory of around 80 engineers, working in areas such as computational biology, quantitative finance, e-security, identity management, and open source software to support Indian languages. In 2009 he retired from TCS at the age of 62, and joined the Erik Jonsson School of Engineering & Computer Science at the University of Texas at Dallas, as a Cecil & Ida Green Professor of Systems Biology Science. In his latest incarnation, he conducts teaching and research in two distinct areas: computational biology and quantitative finance. He is also actively involved in UTD's newly created or planned programs in Bio-Engineering and Systems Engineering & Management.