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ALCOM Seminar by Michael T. Goodrich, University of California, Irvine

Blood on the Computer - How Algorithms for Testing Blood Samples can be used in Modern Applications

This talk discusses combinatorial group testing, which began from work on detecting diseases in blood samples taken from GIs in WWII. Given a parameter d , which provides an upper bound on the number of defective (e.g., diseased) samples, the main objective of such problems is to design algorithms that identify all the defective samples without explicitly testing all n samples. This classic problem has a number of interesting modern applications, and we provide several new efficient algorithms that can be applied in these new contexts. In particular, modern applications we will discuss include problems in DNA sequencing, wireless broadcasting, and network security.