Combinatorics of Boolean functions and more

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We will consider the notions of influence and noise sensitivity for Boolean functions. The influence of a variable (or a set of variables) on a function is the probability that changing the value of the variable(s) can change the value of the function. The noise-sensitivity of a function is the probability that for a random assignment to the variables adding a random independent noise will change the value of the function.

We will look at some old and new results and open problems, and mention connections with Harmonic analysis, sharp threshold phenomena, percolation, random graphs, extremal combinatorics, correlation inequalities, voting, and computation. New results that I will present are based on joint works with Jeff Kahn, Jean Bourgain, Ehud Friedgut, Guy Kindler, Nathan Keller, and Elchanan Mossel.