Aggregating Information by Harnessing the “Wisdom of Crowds”:

New Theoretical Results and Empirical Findings

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The term “wisdom of crowds” (Surowiecki, 2004) is used to describe the robust empirical finding that statistical aggregates of the opinions or estimates of the group’s members (i.e., methods that do not involve direct interactions among the group’s members) outperform most individual judgments. In the first part of this talk I will offer a general and rigorous definition of the “wisdom of the crowd effect”' as well as a statistical framework in which to evaluate it, that explicitly accounts for the inter-dependency among the members of the crowd and their biases. Crowd prediction is treated as a linear combination of group member prediction distributions and the average performance of this aggregate prediction is compared to an individual member (or group of members) selected according to an arbitrary, pre-specified probability distribution. In the second part of the talk I will discuss new methods to measure the magnitude of the effects observed in the process of aggregation of information from multiple judges. To measure the effect of the *size of the crowd* we use a re-sampling methodology that allows us to compare the results of the aggregation process to the distribution of individual judgments. To measure the *contributions of the various individuals to the crowd* I propose using a variant of the influence function that differentiates between the individual contributions, identifies the best (and the worst) contributors and allows one to derive differential weights for the various group members. These measures of individual contributions can be used to derive improved aggregation schemes that outperform the regular averaging procedures.