Abstract: RankBoost has been shown to be an effective algorithm for combining ranks. However, its ability to not overfit and generalize well is directly related to the choice of weak learner, in the sense that regularization of the rank function is due to the regularization properties of its weak learners. We present monotonic concavity as a desirable regularization property for ranking functions, and describe a new weak ranking learner (MWGR) that generates concave ranking functions. This weak learner can be readily optimized. In experiments combining ranks from multiple face recognition algorithms and an experiment combining text information retrieval systems, rank functions using MWGR proved superior to binary weak learners. This is joint work with Ofer Melnik and Yehuda Vardi.