1056-68-121   **G. Beate Zimmer*** (`beate.zimmer@tamucc.edu`), Texas A&M University-Corpus Christi, Dept. of Math and Statistics, Unit 5825, 6300 Ocean Drive, Corpus Christi, TX 78412-5825, **Reid Porter** (`rporter@lanl.gov`), Los Alamos National Laboratory, Los Alamos, NM 87544, and **Don Hush**, Los Alamos National Laboratory, Los Alamos, NM 87544. *Stack filter classifiers with an application to change detection in images.*

While stack filters are usually used for filtering signals, we propose to use them for a classifier. Stack filters are induced by threshold decomposition and a Positive Boolean Function. This function acts on binary strings generated by thresholding the input sample vector by each component of the sample vector. The training of such a classifier consists of finding a positive Boolean function that minimizes the training loss. The decision region is found by growing hyperrectangles around training samples and resolving overlaps between hyperrectangles of different classes. We define training loss in terms of a hinge loss that measures how far each training sample is inside a region of the correct or the wrong class. The optimization uses a regularization which makes it a quadratic programming problem. As an application we use this classifier to distinguish between 'normal' changes in pixel values between two images of the same scene and anomalous changes. (Received July 28, 2009)