Pedestrian Detection with Unsupervised Multi-Stage Feature Learning (Supplementary Material)

Pierre Sermanet    Koray Kavukcuoglu    Soumith Chintala
Yann LeCun
Courant Institute of Mathematical Sciences, New York University
sermanet,koray,soumith,yann@cs.nyu.edu

1. Evidence for using the proposed continuous Area Under Curve measure

Figure 1: Differences between continuous (proposed) and discrete Area Under Curve (AUC) on the INRIA medium scale experiment. In 1(a), we compute the continuous AUC as opposed to a discrete AUC 1(b) based on a few points in the standard benchmarking software. 1(b) clearly shows the shortcomings of the discrete AUC which wrongly attributes a 0% AUC to ConvNet-F instead of 10.36%. Additionally, several models are re-ranked when using the continuous AUC.
Figure 2: Another example of the effects of using the continuous AUC on the ETH large scale experiment. Here several models get re-ranked, including Convnet-U-MS, VeryFast, LatSvm-V2, MultiFtr+Motion, FPDW, MultiFtr+CSS and Shapelet.
2. Evidence for using the proposed fixed INRIA dataset

Figure 3: Effects of fixing INRIA dataset and AUC computation on results. In (d), we report the original results obtained with the INRIA dataset and the Area Under Curve (AUC) as computed by the benchmarking software available at http://www.vision.caltech.edu/Image_Datasets/CaltechPedestrians. In (c), we use the fixed INRIA dataset instead of the original and observe the re-ranking of several algorithms (ChnFtrs, MLS and ConvNet-F-MS advance by one rank). In (b), we use the continuous AUC computation instead of the discrete one and observe the following re-ranking: MultiFtr+CSS, FeatSynth, Convnet-F advance by one rank while LatSvm-V1 by two. In (a), we use both the fixed INRIA and the continuous AUC and observe the following re-ranking as opposed to the unmodified (d) ranks: ConvNet-U-MS, FPDW, MLS, FeathSynth, Convnet-F, and Shapelet advance by one while LatSvm-V1 by two. Note: the fixed INRIA dataset and the modified benchmark software are available at http://cs.nyu.edu/~sermanet/data.html.
Table 1: Results for all experiments on all datasets using the proposed continuous AUC. The top performing results (INRIA-trained only) are highlighted in bold for each row. The continuous AUC percentage is taken over the range [0,1] from DET curves. DET curves plot false positives per image (FPPI) against miss rate. Hence a smaller AUC% means a more accurate system with greater reduction of false positives.

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<th>TudBrussels</th>
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<th>scale=near</th>
<th>scale=medium</th>
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Results for all experiments on all datasets using the proposed continuous AUC.
### Table 2: Results for all experiments on all datasets using the discrete AUC.

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This table is identical to table 1 except it is using the discrete AUC instead of the proposed continuous AUC.