Integrating facial detection and recognition algorithms into real-life applications

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Performances of facial detection and recognition algorithms on publicly available datasets do not always reflect their true effectiveness in practical real-life applications. Parameters such as distance to camera, blur or pose, which vary across datasets, have an important impact on performances. Furthermore, computing speed may also be a key factor for applications requiring real-time decisions. In our department, we work on an application localizing any registered user present in the building in real-time (we also provide an application allowing users to manage their privacy), based only on a few pictures automatically taken during the registration process. In this work, we first compare four open-source facial detection algorithms on the WIDER FACE dataset [6] and on an independent one constructed in our department with volunteers, containing images having a large variation in terms of size, pose, illumination and level of blur. We show that Single Stage Headless Face Detector (SSH) [4] leads to way better precision-recall performances, but is about twice slower than the second best method Faster R-CNN [5]. Second, we compare three open-source facial recognition algorithms on the MegaFace dataset [3] and on our above mentioned one. The latter shows to be much more challenging for all methods, suggesting that publications comparing methods on the former may display performances that cannot be achieved in real-life contexts. We show that InsightFace [2] leads to slightly better precision-recall performances than Dlib [1], but is about five times slower than the latter.

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