P4: Machine Learning, Intelligent Systems & AI for Science and Engineering

5. Niche vs. Clichè: Lightweight Mining of Visual Design Motifs at a Century Scale

Authors: Ioannis Siglidis1, Serge Belongie1
Affiliations: 1. Pioneer Center For AI, University of Copenhagen, Denmark

Abstract: Large design corpora, like movie posters, reuse a compact visual vocabulary: the looming eye, the haunted house, the back-turned protagonist. Extracting this vocabulary can be cast as a pure visual discovery problem: with no label set in advance, one can discover, and then isolate repeated compositions across different images of a dataset. This is a hard problem, both due to the quadratic cost of search, but also because same element, like a looming eye, may reappear with a wildly different visual appearance. Our work, proposes a lightweight no-training approach that allows mining such large corpora of hundreds of thousands (movie poster) to million images (disc covers), into a set of named, grounded region detectors without any design knowledge prior. We improve significantly over prior baselines [Singh et al., 2011], both quantitatively and qualitatively, while our approach enables tracing design patterns, across time, genre, that can even be used to discover design outliers.