Call For Papers
Workshop CV4VA @ CVPR 2016
Computer Vision for Visual Analytics

July 1st, 2016
Las Vegas, NV, USA
`http://cv4va.qcri.org`

1 Topics covered

Motivation and goals: In the Data Science era, analyzing large amounts of abstract data through their graphical representation is a daily business for data scientists in various domains like Computational Biology, Bioinformatics, Social Computing, Cyber-Security, Finance, or High-Performance Computing. When visually analyzing their data, analysts are often overwhelmed with the sheer number of possible node-link diagrams, scatterplots or treemaps to look at, while not having a clear notion of which one might reveal interesting patterns. In this workshop, we will focus on how Computer Vision and Pattern Recognition can help to automatically filter out irrelevant views and put forward most promising ones. While this question is gaining more and more attention in the Visual Analytics community, we envision a large benefit by more actively including the CVPR community into these research endeavors. The goal of the workshop is therefore to bridge the gap between these communities and inspire more joint research projects.

Background: Visual Analytics is a quickly growing field which aims at supporting data analysts with interactive and graphical representations of the data designed to increase insight discovery and complement traditional Machine Learning model-based analysis. During the Visual Analytics process, the analyst has to identify relevant representations of the data among a variety of possible graphical depictions. The space of possibilities includes the mappings on graphical variables used to encode the information (*e.g.* the form of the representation as scatterplots, node-link diagrams, parallel coordinates, treemaps... rendered as an image on the screen), as well as the features and samples, or their summary which are to be visualized (the underlying content of the representation). Which representation leads to meaningful and interesting insights strongly depends on the abstract patterns contained in the data (correlation, clusters, outliers...), the ability of the representation to make these patterns salient to the human visual system, as well as user's specific goals and prior knowledge.

In practice, analysts rely on their experience to select interesting images within this search space. They can spend most of their time exploring a large number of uninteresting views, testing different parameter settings by hand, and selecting or summarizing features and samples, until interesting results are visually identified. The identified insights enrich the analyst's knowledge of the data, and further supports the identification of other views of interest, based on the patterns previously seen.

Computer Vision and Pattern Recognition enable to process image data and extract patterns in a way mimicking the human visual perception system, while Machine Learning offers a variety of techniques to learn relevant features from labeled images. Altogether they might provide rich opportunities to *support* data scientists finding valuable insights using Visual Analytics.

Topics of Interest: The CV4VA Workshop invites researchers in Computer Vision, Pattern Recognition and Machine Learning to discuss and propose innovative ways to use advanced computing techniques for guiding the Visual Analytics process.

The issues we wish to handle include, but are not limited to:

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- What are the low and high level visual patterns or features used by the human visual perception system when visualizing graphical representations like scatterplot, parallel coordinates plots, node-link diagrams, treemaps, or other visualizations?
- How can these visual patterns or features be leveraged to design new computer vision algorithms for automatic extraction, similarity measurements and analysis of patterns in such graphical representations ?
- How can similarity measurements or specific pattern discovery tasks, such as outlier detection, class separation, or cluster detection, be efficiently automatized in given standard graphical representations?
- How to exploit these models to recommend relevant graphical representations to data analysts?
- What are meaningful human-labeled visualizations (i.e., images with human judgment or tagging) in the context of Visual Analytics and how to collect large collections of them?
- How can we use these labeled images to model human perception and possibly higher level cognition, improve computer vision and pattern recognition techniques in that context and finally quantify and improve the visual analysis experience?

2 Important dates

- **Submission deadline: April 13, 2016**
- Decisions to authors: April 24, 2016
- Camera-Ready deadline: May 1st, 2016
- Workshop: July 1st, 2016

3 Submission process

3.1 Criteria

Submissions to be considered should thoroughly investigate the issues related to merging Pattern Recognition and Computer Vision, with human-in-the-loop Visual Analytics techniques either solving a specific real problem or developing a more general theoretical approach, along the topics outlined above.

We encourage high quality submissions. All papers will be judged based on their novelty and their relevance to the topic of the workshop. They will undergo a thorough double-blind review by at least 2 experts in the fields they address and will get the opportunity to be proposed as an extended version to a journal special issue after the workshop (Pattern Recognition journal has been contacted). Papers will be made publicly available online on the workshop website after the workshop venue.

All accepted papers will be presented as posters, and some of them as oral presentation depending on their likeliness to fuel the debate in the audience as judged by the reviewers and the organizers. Submission of the paper implies agreement of the author(s) to attend the workshop and present the paper or poster if accepted.

All accepted papers will appear in the CVPR conference proceedings and in IEEE Xplore.

3.2 Format

- **Short papers** for position paper or ongoing research, can be up to 4 pages in length including references.
- **Research papers** for completed research work can be up to 8 pages in length including references.
- **Templates** are the ones of the CVPR conference except for the page limit specified above. Papers will undergo a **double-blind** review process following the CVPR instructions to authors. See `http://cvpr2016.thecvf.com/submission/main_conference/author_guidelines` for more details.

3.3 Submission site

Paper submission and review site is available here:

`http://cv4va.qcri.org/submission.php`

4 Invited speaker

Anushka Anand is a research scientist at Tableau Software (`http://www.tableau.com/`). Her focus is on the intersection of statistical learning methods and information visualization to provide guided visual analytics. She consults with feature teams working on statistical algorithms for cleaning and analyzing data.

Anushka earned her Ph.D. and M.Sc. degrees in Computer Science from the University of Illinois at Chicago. Her research work involved leveraging visual patterns that were associated to statistical features in data for both the summarization of high-dimensional data and in the development of a generalizable classification algorithm.

`https://research.tableau.com/user/anushka-anand`

5 Organizers

- Michaël AUPETIT , Qatar Computing Research Institute, HBKU, Doha, Qatar, (**Primary contact: maupetit@qf.org.qa**)
  `http://www.qcri.qa/our-people/michaelaupetit`
- Michael SEDLMAIR, University of Vienna, Austria,
  `https://homepage.univie.ac.at/michael.sedlmair/`
- Stéphane MARCHAND-MAILLET, VIPER group, CUI, University of Geneva
  `http://viper.unige.ch/stephane`
- Enrico BERTINI, NYU Tandon School of Engineering, New York, USA,
  `http://enrico.bertini.io/`
- Pierrick BRUNEAU, LIST, Luxemburg,
  `http://www.bruneau44.com/index.php/en/`
- Emma BEAUXIS-AUSSALET, CWI, Amsterdam, Netherlands,
  `http://www.cwi.nl/people/2433`

6 International Program Committee

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