Reading Group
(With Prize!)

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RULES OF ENGAGEMENT

There is no shortage of approaches to take an image and "extract" a collection of "descriptors", such as SIFT, SURF, HOG, PHOG, CHOG ORB, BRISK, DAISY, PHOW, CARD, MSER, ASIFT, and the list goes on. If you are a graduate student considering a career in Computer Vision, this gives you pause, and makes you ask questions.

- Why is there such a diversity of approaches?

- Is one approach better than the others? How can I tell what "better" means?

- Is the whole exercise (taking an image and "extracting" such descriptors) sensible?

- Is it a good idea, in light of the Data Processing Inequality that you have just studied?

- Is there a way of "combining" all approaches to obtain one that is better than any of them?

- Is there a way to predict the performance of any of these approaches, without actually trying it out on a dataset?

- What are the properties that a local descriptor should satisfy?

- Is it possible to design an approach that is better than any of the existing ones?

The primary goal of this reading group is to get you to ask yourself questions.

Thus, in the First part of this exercise - to be conducted at home prior to traveling to the School - you will read the papers that describe the approaches above (or other approaches not listed here) and formulate a list of questions that will guide your exploration. Asking good questions is one of the most important steps in research. You will therefore select, among the questions you have come up with, the most poignant, and document them in your report. We will call these key questions.

You will then use the literature to help you answer these questions. Starting from the list of references in the papers you read, you will trace the roots of the ideas backward in time, until you feel like you have answered the key questions. In some cases, it is possible that none of the papers, nor the literature, answers your key questions. That opens the possibility for new investigation. If that happens, you will document in your report your plan to tackle the key questions.

In the second part of this exercise, which will be conducted in an afternoon at the School, you will report on the results of your investigations. If you feel that the papers you have read have failed to address some of the key questions, you will present your key questions to the audience, and argue that understanding these key questions will help move the state of the art forward.

If you feel that you have a solution to some of the key questions that were not addressed in the literature, or have a proposal for how to tackle them, you will present these ideas to the audience as well.

The audience will then vote for the best investigating work: Are the questions you are asking really "key"? Have you dug deep enough in the literature before declaring them "open"? If you have proposed a solution, is the plan sound?

Whether you are going to pursue a career in academia, industry or government, chances are you will have to convince someone to invest in your ideas. Therefore, Presenting your ideas in a convincing and competent manner is important.

As the french say, there are four ingredients to success: (1) savoire, (2) faire, (3) savoire faire, (4) faire savoire, which is the purpose of the second part of our exercise.

You are welcome to work individually or in groups. You are welcome to crowdsource, or to spend long hours in a dusty library. Use all the tools at your disposal. Ask good questions. Seek crisp answers. Present your ideas concisely and compellingly.

If you do all that, you will win a prize in the form of $1,000. As customary with the ICVSS Reading Group, the audience will be the decider. Thus your delivery and presentation, as well as the ability to defend your ideas in front of a critical audience, is just as important as the content and the work you have done prior to the show.

Submission: The report about your homework is due on the first day of the school (16/07/2012) and should be sent in PDF or Word format to icvss@dmi.unict.it. Your name, email address and university/organization should be written at the top of your report.