Reading Group (with prize!)

SOMETHING OLD, SOMETHING NEW ...

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RULES OF ENGAGEMENT

The goal of this reading group is to encourage you to connect the dots. You will chose a topic among the 6 proposed, and look for the earliest reference, and the latest reference. You can restrict the scope to google-searchable documents, say published during the past quarter century, up to the most recent ICCV (2009).

For both the oldest and the newest reference, you will read them with a critical eye: What is the key idea(s)? is it well grounded? what principle(s) motivate it? how does the idea translate into a method or algorithm? are there better way of achieving the same goal? is that the right goal? what does it mean "right"? etc.

After this exercise, you will may discover that there is relatively little in common between the oldest and the newest reference. How can that be, given that they address the same topic? Or, you may discover that not much has changed; how is the topic still "active" then? Your goal, therefore, is to "connect the dots." That is, to trace the older idea(s): were they abandoned? if so, why? were they proven "wrong'"? if so using what criteria or evidence? how did the "new" approach take hold? has there been a "revisitation" process whereby older ideas were rediscovered anew? Is there a "trajectory" of ideas that can be extrapolated? or are they random samples in some space, with no discernible "flow"?

Your exercise will take a few weeks, so it is important to do the ground work prior to traveling to the Summer School. The product will be a brief report, summarizing in a concise manner your discoveries. You will also produce a few slides, in the form of a 10-minute lecture (no more than 10 slides).

On the first day of the school, you will submit your report and slides to the School organizers, who will select a list of finalists, based on the quality of their exercise.

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The finalists will then be called to present their results in front of the full audience, on the day of the reading group, and face questioning by the audience. The audience will then vote for the best exercise. It is up to you to convince the audience of what "best" means. Perhaps you performed a thorough academic exercise. Or, perhaps, the exercised helped you spawn a new idea. Or maybe you discovered an old idea that, somehow, was abandoned but that is worth revisiting? In any case, you will have to defend your work.

The winner(s) of the competition will receive a check of US$1,000. Collaborative work is encouraged, but of course you will share the prize…

Topics (with some suggestions of questions to ask yourself; by all means not an exhaustive list):

1) Visual Texture: what is it? why is it important/useful/relevant? why was it brought about? how is it inferred? what is the simplest manifestation?

2) Visual Feature: what is it? why is it important? can one do without? what is the best feature? where is it useful/relevant? why was the idea brought about?

3) Shape: what is it? how is it defined? how is it inferred? used? what is it useful for? How does the concept generalize to other domains, applications, fields? what is the simplest manifestation? where do shapes live?

4) Context: what is it? how is it defined? why is it important? Can one do without? how is it inferred? Can it be abstracted?

5) Tradeoffs: Bias-variance, complexity-fidelity, rate-distortion, … where do they originate? is there something deep behind them? can we do without? how do they apply to visual inference?

6) Visual communication vs. Visual recognition: in Rate-Distortion theory the task is reproducing as faithful as possible a copy of the data at the source (minimize distortion), the cost is the number of bits. Provide one pays enough (bits), one can get arbitrarily small distortion. Visual recognition: the task is to recognize an object with the smallest expected error (minimal risk), the cost is what? What do we need "enough of" to perform visual recognition with an arbitrarily small expected error? who has addressed this problem?

Syllabus: Reading Group

Submission Guidelines
(14/07/2011)

Dear ICVSS Student - as the academic year winds down, we would like to remind you that you are not quite done with projects and finals ... ICVSS will hold the reading group, with the associate contest. Do your job well and you can win the $1,000 prize. More importantly, do your job well and you will a valuable experience and opportunity to discuss your findings with fellow students and faculty in the school.

Your job, referring to the instructions circulated weeks ago and posted on the website, is to critique an idea or line of thought from its inception (or to an early reference) to the present day, and "connect the dots"
between old and new work on the same topic.

Since the report is due on the first day of the school (see http://svg.dmi.unict.it/icvss2011/reading.htm), you will have to do your homework prior to traveling to Sicily. School faculty will evaluate all the reports submitted and select finalists, who will have to present their work in front of the school. All your peers will be the judges.

It is the intention of this Reading Group to encourage you to exercise and improve all 4 skills that are necessary for academic success, concisely summarized by the French as:
(i) Savoire, (ii) Faire, (iii) Savoir Faire,
(iv) Faire Savoire.

i) Savoire: you have to do your homework and not just read, but ruminate, eviscerate, dissect, ponder, obsess, and eventually understand.

ii) Faire: you have to work hard; ideas don't just come to you (cfr Edison's "Genius is 1% inspiration and 99% perspiration")

iii) Savoire Faire: You will have to face an audience, and convince them that your work is not just good, but best. It takes some skills to do so.
Some are better than other, but a lot can be learned, so why not starting now? Discuss your ideas with your fellow students before the reading group and try to get your thesis across (in the US, such lobbying is legal and widely practiced especially by firms with offices along some boulevards in Washington, DC)

iv) Faire Savoire: When you present your work and your ideas, be an effective communicator. Again, some are better than others, but a lot can be learned.

The 6 topics to choose from are described on the website:

1) Texture
2) Feature
3) Shape
4) Context
5) Tradeoffs
6) Communication

Be well, do good work, and keep in touch!