



HOW TO CONDUCT A LITERATURE REVIEW AND DISCOVER THE CONTEXT OF AN IDEA (WITH PRIZE!)

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RULES OF ENGAGEMENT

Let's say you are attending a conference and find a particular talk intriguing, or a particular idea catchy. Maybe you are considering working in the same area, or expanding on the idea as part of your research. The first thing to do, your advisor would tell you, is to read up on the matter. The starting point is the list of references in the paper. Unfortunately, an experiment suggests that this approach may not necessarily be optimal [M. Simkin and V.P. Roychowdhury, "Read before You Cite!", *Complex Systems*, 2003, 14, 269-274].

So you do not really want to rely entirely on the list of references provided at the end of the paper, and you want to cast your net a little wider and deeper. But where to start? Google, you say. Ok. But unfortunately most search engines do not index work prior to the eighties (that was pre-history to some of you, but not to an academic field). And even if they did, how do you choose, among the thousands of hits, which ones to read? The most cited ones, you say. Fine, but that may get you trapped in a local minimum in which - after a few people start citing a given work, everyone else follows, including you, and you miss out on all the work leading to that idea, that may contain seeds of more interesting ideas or developments.

It is important to trace back an idea to its root not only to give proper credit to its originators, but also to avoid re-discovering the same concept over and over, which slows down progress of the academic community as a whole (a small degree of rediscovery is unavoidable, and sometime healthy).

As part of this discussion, we will do a scholarly exercise. Let's pretend that the talk that you listened to and sparked your interest and curiosity was one of three (following the three themes of this year's school):

- 1) "Multi-modal volume registration by maximization of mutual information"
- 2) "Secrets of Optical Flow Estimation and Their Principles"
- 3) "Towards high-resolution large-scale multi-view stereo"

Prior to arriving at the School, your homework is to research the literature and trace the roots of the ideas contained in these presentations as far back as you can (ok, Aristotle may be a bit of a stretch, but don't stop at your birthdate either). During the session, which will be interactive, students will explain to the class the process by which he or she arrived at the roots of an idea.

The outcome of this exercise will be a tree, having the paper of interest as root, and going back as far as possible. To add some spice to the exercise, a prize will be handed out to the student(s) that can link the highest number of papers tracking back the idea, that do not appear in standard search engines (say Google Scholar). US\$100 for each paper that the student can argue is meaningfully related to the idea in question, with a 10% premium if the authors are deceased, up to a maximum of US\$1,000.

Homework/Syllabus

Students are required to read up on the topics described in the three "hypothetic lectures" above, and arrive at the school with a report, in the form of a brief PDF document, describing the dependency tree discovered in the exercise.