Seminar report review
Gene regulatory networks seminar
Department of Computer Science
Spring 2010

Report title: **Unspecified**
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Reviewer: Laura Langohr

This report is about inferring gene regulatory networks (GRN) from gene expression (microarray) data. The author describes module networks, a method that infers continuous valued GRN models. He describes the method's algorithm, test settings, results, verification of the results, and discusses advantages and disadvantages of the method. He also shortly mentions two other methods and the problem of data integration.

The report is already a good one. It is structured, easy to read, and I had seldom difficulties to follow you. Even though, I think, it still can be improved. In the following I list suggestions for improvement: first, more general ones, about the content and structure of the report, citations and references, as well as figures and examples. Finally, I will list more detailed comments and suggestions for improving the report. These are comments and suggestions about inconsistency or things that remained unclear to me. I will give you a copy of your report where I marked the typing and other minor mistakes.

Content and structure of the report

What is the title of you report? Write it above the table of contents. You named the file “GRN inference in practice” - is this the title of your report or which is it? (If it is, write GRN out.) Then again you write “In this report, we will discuss briefly about continuous valued models and some of the methods that follow this principle. ” Is this a second topic of your report? Or how does it relate to the GRN inference? Make it more clear what the central topic of your report is and which topics you only introduce to be able to describe your central topic.

Further, scientific articles have an abstract and the introduction is the first section. I prefer to structure a seminar report in the same way. Further the introduction usually ends with a description of the following sections using phrases like “In Section 2 ...”, and “In the following section … (Section 3)” and so on. If you would change your report according to these it also makes the report easier to read and to follow you into the different sections as the reader has already an overview what will be described in which section. Keep anyway the few sentence long description of the current section in the beginning of each section. This is very nice and makes it easy to follow the content.

Besides these, you could make your introduction more detailed. Introduce your topic in a more general way: why is it so interesting to infer gene regulatory networks in general? Why do they have to be inferred at all?

In the introduction you are referring to previous chapters when mentioning that you will not go into details of logic and continuous valued models. However, it would be helpful for the reader to state in a single sentence what logic and continuous valued models are and their difference. Maybe this part about continuous valued methods could even be a separate section? You describe the differences quite detailed, so maybe it is better to make a separate section.

The last section is usually called conclusion. However, it starts usually with a short summary of the report, like your summary consists of. So what I am missing is a conclusion: What does the content of the report teach the reader in general? What is it's importance for gene regulatory networks? What are topics for future work?

Citations, references, and titles

The section title should be “References” (plural) as you have more than one reference. Further, it usually is not numbered and not mentioned in the table of contents. For the other sections again you could write the section's number also before its title (and not only mention it in the table of contents). If you number subsections (with 2.1, 2.2, and so on) also, it is easier for the reader to know where he/she is. This would also make it more clear what a title is and what not. For example, is “continued valued models” in the third paragraph of the introduction a title or not? I think it is not needed here anyway as it is mentioned in the following sentence and you do not have a second subsections. In general: make only a subsection if there are at least two subsections in the same depth.

Make section titles inside report and in the table of contents consistent. Why do you list “Module Networks: Introduction” in the table of contents, but the main “Introduction” not? Isn't the first a subsection and the latter a section? Section titles have to be listed, subsection titles can left out, but I would include them, too.

Citations should be used in a consistent way. In computer science articles [ ] brackets are usually used with numbers like this: “Segal et al. [2] write ...” or even without mentioning the author's name, just a “[1].” behind a sentence. These number should then appear also in front of each reference in the list of references, so that it is possible to find the articles or books and their details in your references.

Make a citation everywhere, where you cited directly or indirectly. Add also citations behind all names and articles you are mentioning, like “the authors” or “other articles”.

Article titles are usually not mentioned in the text, a reader who wants to know the title of an article can look it up in the references. For example, I would write instead of your last two sentence in the Inferelator section something like this: “This method has produced impressive results in when applied to yeast and bacteria data sets (for more information see article by Bonneau et al. [4]) .” Is this article missing in the references? Make sure to list all references there.

References to figures, tables, algorithms, and sections are made by referring to “Figure 1” (or Fig. 1), but “in the next figure”. A capital letter is used for figures, tables, algorithms, and sections, if its number is following. Writ other numbers smaller than 10 again in words, i.e., write about “five genes involved in ...”, but about “12 genes of the 29 involved in ...”

Further, I think it is preferably not to write “in Chapter 13” (Introduction, first sentence), but to make it more your report. You could, e.g., write “In this report we are looking at ...” If the next sentence is the first indirect citation from Chapter 13, then add a citation after this sentence. If you do not make these changes, then add after “Chapter 13” the citation. Anyway, make similar changes everywhere in your report, where you have citations like this.

Make the list of references consistent: for example, use always the same order: first, author names; second, article title; …; last, year. Write out the first name for all authors or abbreviate it for all. Specify for every article and book where it was published. For website mention when you have been accessing them.

Figures, tables, algorithms, examples, and their content

The included figures and tables visualizes the described content very nicely. Though, I would prefer your own captions. This way the numbering can be corrected (there is no Figure 5), the same text size can be used, and you could describe the content of the figure/table in your own words. You refer in an appropriate way to the figures, but write either “Figure 1” or “Fig. 1”.

In addition, you should make sure that you refer to every figure/table from the text and describe their content with your own words. What is displayed in them in general and what is the most information within them? You should also describe within the text of the section what can be seen

in the figures and tables. Do not leave it for the reader to search in the table what is interesting and important in it. You do not have to mention each detail, but describe the main / all important things.

It is preferably not to use enumerations and itemizations in reports (in contrast to presentations). Write rather full sentences. For example, the algorithm in the module networks section should be described in sentences without enumerations and itemizations: instead of steps 1.-3. you can make separate paragraphs and start them with “In the first step ...” and so on.

The details of the algorithm remains unclear for me, how are these four items used to assign the genes to the modules? Maybe there could be some mathematical representation of the algorithm in addition to a textual description? Now, I get a rough idea of it, but I am missing the details.

Also the results (in the module networks section) remain unclear. Could you describe the four example modules with words? For example, what does it mean that for the respiration module six genes are glucose metabolism regulators? Does it mean that they were wrongly assigned or something else?

Detailed comments and suggestions

Avoid also questions like “Why continued valued models?” in the introduction. This is for sure an important question, but just answer it. Further, it is also preferably not to make paragraphs consisting of single sentences.

In the first sentence of the methods section you write that you go only for one method into detail. Tell the reader already here which one it is. Otherwise he/she will figure it out only three subsections later.

Experimental tests: Why where the strains tested under these specific conditions? What were the reasons to selected these conditions? Why do these experiments allow a complete evaluation of the accuracy of the predicted conditions? Or do I misunderstand your last sentence. You could make two out of them anyway in order to make it easier to read. Did you maybe mean: “These genome-wide experiments allowed a complete evaluation of the accuracy of the predicted conditions. This is, whether it regulates those genes of a module it was predicted to regulate, and most importantly if it regulates processes that the algorithm predicted it to regulate.” If so what is this “it”referring to?

Discussion: do not use itemizations, but write the content in full sentences. Further, give more background for each item: for example, why are module networks suitable to be applied to higher eukaryotes?

Data integration: you just mention two methods, but you do not describe any details. Either remove the whole section – does it give any important information for the central topic of your report? Or state that you will not describe the details of these methods in this report and make a citation to some article(s)/book where more information can be found.