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ABSTRACT

This paper provides a set of instructions of how to import a dataset that includes a sample of a Facebook graph from the SNAP (Stanford Network Analysis Platform) library which was created for analisys and graph mining.

This also includes the steps of how to export the graph to GraphML, GEXF, GDF and JSON Graph Format with GraphSON afterwards we export the graph with each of the formats to Gephi.

By reading these paper you will also find how to create a new document on LaTeX using the ACM format which is beeing used on these paper.

CCS Concepts

•**Computer systems organization** → **Embedded systems;** *Redundancy;* Robotics; •**Networks** → Network reliability;

Keywords

ACM proceedings; LaTeX; text tagging

1. INTRODUCTION

A graph is a data structure with a finite set of vertex or nodes that get together by edges, there are directed graphs, that are the graphs wich edges point to a direction, and undirected graphs, which edges point in both ways.

Stanford Network Analysis Platform is a library being actively developed since 2004, this is a very eficient library wich can analyze houndreds of millions of nodes and billions of edges, this can scale to massive networks and si written in c++.

2. THE BODY OF THE PAPER

We have already talked about what are graphs, what is SNAP and what can we do when them, but we haven't talked about what can we do whith these tools or how to use them.

Is important to say that we will be working with the facebook graph sample, but you can do it with any graph, just remeber to change the name of the file everytime we need to make a route.

2.1 Importing the Facebook graph

The first thing we are going to talk about is of how to import a dataset that includes a sample of a Facebook graph. You need to get into `https://snap.stanford.edu/data/index.html` and choose which graph you want to use, in these case, we will get into social networks directory and inside there we will choose Facebook, remember you can choose anything.

You will need to download the facebook_combined.txt.gz, unzipit in the folder

where you want to use it (Don't forget to add the SNAP library in the directory where you will work) and when you see the file, you will see a bunch of numbers, those numbers are the graph.

Crete your main.cpp, there you will have to import the graph and chek if it was imported succesfully, inside the main, you wil need to put a line that should looke like these, `PUNGraph g=TSnap::LoadEdgeList<PUNGraph>("../facebook_combined.txt",0,1);` where you are declaring a new PUNGraph variable and giving thar variable the Facebook graph, now we have imported the graph.

The only way to know if something really worked is by checking it, we will print the amount of nodes that we have on the graph by printing the name of your graph.GetNodes(), in this case, g->GetNodes(); and if it prins the amount of nodes that the SNAP's web syte says that means you have succesfully imported the graph.

2.2 Exporting the graph

Now is time to talk about how to export the graph, we will export the graph in four different ways, GraphML, GEXF, GDF and JSON Graph Format with GraphSON, each of them have their oun implementation, but these time wil will talk about the general process we should make and after that, you shold be able to make the same thing with the other ones.

Basically what we need to do, is to make a new ofstream file and we will start to print what we want inside that file (in each case we have a different file), these method should have a condition or a cicle so that all the nodes can be printed inside of that file.

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Table 1: Frequency of Special Characters

Non-English or Math	Frequency	Comments
Ø	1 in 1,000	For Swedish names
π	1 in 5	Common in math
\$	4 in 5	Used in business
Ψ_1^2	1 in 40,000	Unexplained usage

2.3 LaTex

A vey big problem for people who is not used to designing and thinking of how shold things go on an investigation paper is that we have to think where to put each of the things in the document, like the date, the name, presonal information and other things.

For all the people that is most of all interested in the real content, you can use LaTeX , these is a tool that allows people to just write content and dont worry about designing problems, and let the designers take care of that.

The only thing we shold do is (if you are in linux, if you are not, you should find a paper with a tutorial for your operating sistem) install any tool for LaTeX , in my case I used Texlive, after doing that, you should open your favorite text editor and start writting your paper, in my case I used a tamplate from ACM and I edited it.

To see what you have crated, you need to make your .tex file into a .pdf by doing ctrl + Alt + B, if when you do that nothing happends, that means you have a compilation error, you should check the syntaxis of everything that has been written in the document.

2.4 Tables

Because tables cannot be split across pages, the best placement for them is typically the top of the page nearest their initial cite. To ensure this proper "floating" placement of tables, use the environment **table** to enclose the table's contents and the table caption. The contents of the table itself must go in the **tabular** environment, to be aligned properly in rows and columns, with the desired horizontal and vertical rules. Again, detailed instructions on **tabular** material is found in the *LaTeX User's Guide*.

Immediately following this sentence is the point at which Table 1 is included in the input file; compare the placement of the table here with the table in the printed dvi output of this document.

To set a wider table, which takes up the whole width of the page's live area, use the environment **table*** to enclose the table's contents and the table caption. As with a single-column table, this wide table will "float" to a location deemed more desirable. Immediately following this sentence is the point at which Table 2 is included in the input file; again, it is instructive to compare the placement of the table here with the table in the printed dvi output of this document.

2.5 Figures

Like tables, figures cannot be split across pages; the best placement for them is typically the top or the bottom of the page nearest their initial cite. To ensure this proper "floating" placement of figures, use the environment **figure** to enclose the figure and its caption.

This sample document contains examples of **.eps** files to be displayable with LaTeX. If you work with pdfLaTeX, use files in the **.pdf** format. Note that most modern TeX system will convert **.eps** to **.pdf** for you on the fly. More details on each of these is found in the *Author's Guide*.

Figure 1: A sample black and white graphic.

Figure 2: A sample black and white graphic that has been resized with the `includegraphics` command.

As was the case with tables, you may want a figure that spans two columns. To do this, and still to ensure proper "floating" placement of tables, use the environment **figure*** to enclose the figure and its caption. and don't forget to end the environment with figure*, not figure!

2.6 Theorem-like Constructs

Other common constructs that may occur in your article are the forms for logical constructs like theorems, axioms, corollaries and proofs. There are two forms, one produced by the command `\newtheorem` and the other by the command `\newdef`; perhaps the clearest and easiest way to distinguish them is to compare the two in the output of this sample document:

This uses the **theorem** environment, created by the `\newtheorem` command:

THEOREM 1. *Let f be continuous on $[a, b]$. If G is an antiderivative for f on $[a, b]$, then*

$$\int_a^b f(t)dt = G(b) - G(a).$$

The other uses the **definition** environment, created by the `\newdef` command:

Definition 1. If z is irrational, then by e^z we mean the unique number which has logarithm z:

$$\log e^z = z$$

Two lists of constructs that use one of these forms is given in the *Author's Guidelines*.

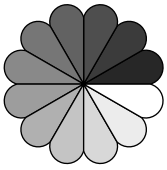

Figure 4: A sample black and white graphic that has been resized with the `includegraphics` command.

Table 2: Some Typical Commands

Command	A Number	Comments
`\alignauthor`	100	Author alignment
`\numberofauthors`	200	Author enumeration
`\table`	300	For tables
`\table*`	400	For wider tables

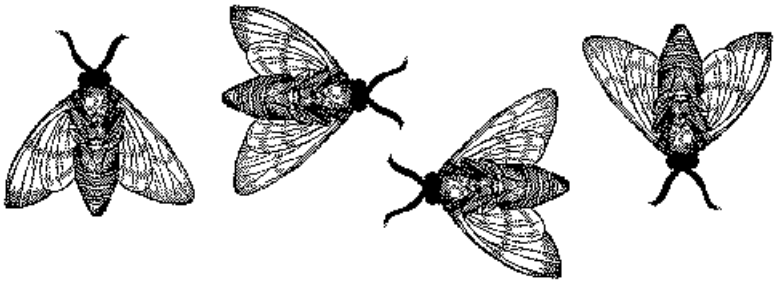

Figure 3: A sample black and white graphic that needs to span two columns of text.

There is one other similar construct environment, which is already set up for you; i.e. you must *not* use a `\newdef` command to create it: the **proof** environment. Here is a example of its use:

Proof. Suppose on the contrary there exists a real number L such that

$$\lim_{x\to\infty} \frac{f(x)}{g(x)} = L.$$

Then

$$l = \lim_{x\to c} f(x) = \lim_{x\to c} \left[gx \cdot \frac{f(x)}{g(x)} \right] = \lim_{x\to c} g(x) \cdot \lim_{x\to c} \frac{f(x)}{g(x)} = 0 \cdot L = 0,$$

which contradicts our assumption that $l \neq 0$. □

Complete rules about using these environments and using the two different creation commands are in the *Author's Guide*; please consult it for more detailed instructions. If you need to use another construct, not listed therein, which you want to have the same formatting as the Theorem or the Definition[1] shown above, use the `\newtheorem` or the `\newdef` command, respectively, to create it.

A *Caveat* for the TEX Expert

Because you have just been given permission to use the `\newdef` command to create a new form, you might think you can use TEX's `\def` to create a new command: *Please refrain from doing this!* Remember that your LATEX source code is primarily intended to create camera-ready copy, but may be converted to other forms – e.g. HTML. If you inadvertently omit some or all of the `\def`s recompilation will be, to say the least, problematic.

3. CONCLUSIONS

This paragraph will end the body of this sample document. Remember that you might still have Acknowledgments or Appendices; brief samples of these follow. There is still the Bibliography to deal with; and we will make a disclaimer about that here: with the exception of the reference to the LATEX book, the citations in this paper are to articles which have nothing to do with the present subject and are used as examples only.

4. ACKNOWLEDGMENTS

This section is optional; it is a location for you to acknowledge grants, funding, editing assistance and what have you. In the present case, for example, the authors would like to thank Gerald Murray of ACM for his help in codifying this *Author's Guide* and the **.cls** and **.tex** files that it describes.

5. REFERENCES

[1] S. Salas and E. Hille. *Calculus: One and Several Variable*. John Wiley and Sons, New York, 1978.

APPENDIX

A. HEADINGS IN APPENDICES

The rules about hierarchical headings discussed above for the body of the article are different in the appendices. In the **appendix** environment, the command **section** is used to indicate the start of each Appendix, with alphabetic order designation (i.e. the first is A, the second B, etc.) and a title (if you include one). So, if you need hierarchical structure *within* an Appendix, start with **subsection** as the highest level. Here is an outline of the body of this document in Appendix-appropriate form:

A.1 Introduction

A.2 The Body of the Paper

A.2.1 Type Changes and Special Characters

A.2.2 Math Equations

Inline (In-text) Equations.

Display Equations.

A.2.3 Citations

A.2.4 Tables

A.2.5 Figures

A.2.6 Theorem-like Constructs

A Caveat for the TEX Expert

A.3 Conclusions

A.4 Acknowledgments

A.5 Additional Authors

This section is inserted by LaTeX; you do not insert it. You just add the names and information in the `\addition-alauthors` command at the start of the document.

A.6 References

Generated by bibtex from your .bib file. Run latex, then bibtex, then latex twice (to resolve references) to create the .bbl file. Insert that .bbl file into the .tex source file and comment out the command `\thebibliography`.

B. MORE HELP FOR THE HARDY

The sig-alternate.cls file itself is chock-full of succinct and helpful comments. If you consider yourself a moderately experienced to expert user of LaTeX, you may find reading it useful but please remember not to change it.