Transforming XXX and XXX to Ontology for XXX

[CSC766 Final Report]

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ABSTRACT

Data placement is important for the performance of a GPU program. However, finding suitable data placement is becoming increasingly hard because of the growing complexity of memory systems and the sensitivity of data access patterns related to input. A more general, extensible, and reusable modeling for the memory systems and data access pattern is needed to achieve better performance.

This paper introduces Ontology, a general-purpose modeling for knowledge resources, to build general, extensible, and reusable knowledge bases to systematically and formally represent and reuse knowledge about GPU memory systems and data access patterns. In particular, this paper presents two work. The first work is to ... The second work is to ... With the work, XX would benefit from ...

General Terms

Compiler

Keywords

Compiler, Ontology, ...

1. INTRODUCTION

Ontology [1, **?**] is a general-purpose modeling for knowledge resources. It uses precise descriptive statements about knowledge of some domain. It is designed to represent rich and complex knowledge about things, groups of things, and relations between things... provide mutual understanding ...

Different ontology languages provide different facilities. The most recent development in standard ontology languages is OWL from the W3C. (W3C OWL 2 Web Ontology Language) OWL is a computational logic-based language to express ontologies. Knowledge expressed in OWL can be reasoned with by programs either 1. to verify the consistency of that knowledge or 2. to make implicit knowledge explicit.

Components of OWL

Ontologies

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Individuals represent objects in the domain in which we are interested Properties are binary relations3 that link two individuals together Classes are used to model abstract knowledge for grouping objects with similar characteristics.

Classes can be organized into superclass-subclass hierarchy and they are described or defined by the relationships that individuals participate in.

GPU data placement

Model MSL (Memory Specification for Extensibility) - translate grammar-based rules into ontologies

Modeling and matching memory access patterns - static program analysis of CUDA program, online profile is possible by embedding OWL reasoning engines

reference: âĂIJOWL 2 Web Ontology Language Primer (Second Edition).âĂİ Accessed March 21, 2015. http://www.w3.org/TR/2 owl2-primer-20121211

A Practical Guide To Building OWL Ontologies Using Protege 4 and CO-ODE Tools Edition 1.3

http://www.semanticweb.gr/thea/

2. RELATED WORK

Ontology is widely used. A lot of work has been done. Moor et al. [**?**] and Leenheer et al. [**?**] focus on community-based evolution of knowledge-intensive systems with Ontology.

A lot of work has been done by the Semantic Web community on formalizing, reasoning and querying ontologies.(!!!)

Tang et al. [**?**] implement a profile compiler that support ontology-based, community-grounded, multilingual, collaborative group decision making by Ontology engineering to lift terms in multilingual sources to the conceptual level in order to tackle the problems of ambiguity and misunderstanding.(!!!)

Also, Ontology is one of the hottest topic in software engineering. For example, create of Web-portals on the basis of ontology and use ontology for navigation in information arrays. for intellectualizing software agents. [**?**] by Kleshche himself. point out that ..

The potential of ontology is more than above.

3. THE *BODY* OF THE PAPER

3.1 Citations

Citations to articles [**?**, **?**, **?**, **?**], conference proceedings [**?**] or books [**?**, **?**] listed in the Bibliography section of your article will occur throughout the text of your article. You should use BibTeX to automatically produce this bibliography; you simply need to insert one of several citation

Table 1: Correctness for All the Questions

Classes and Instances	ClassAssertion()
Class Hierarchies	SubClassOf()
Object Properties	ObjectPropertyAssertion()
Property Hierarchies	SubObjectPropertyOf()
Datatypes	DataPropertyAssertion()

Table 2: 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

commands with a key of the item cited in the proper location in the `.tex` file [**?**]. The key is a short reference you invent to uniquely identify each work; in this sample document, the key is the first author's surname and a word from the title. This identifying key is included with each item in the `.bib` file for your article.

The details of the construction of the `.bib` file are beyond the scope of this sample document, but more information can be found in the *Author's Guide*, and exhaustive details in the *LaTeX User's Guide*[**?**].

This article shows only the plainest form of the citation command, using `\cite`. This is what is stipulated in the SIGS style specifications. No other citation format is endorsed or supported.

3.2 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.

3.3 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** and **.ps** files to be displayable with LaTeX. More details on each of these is found in the *Author's Guide*.

Figure 1: A sample black and white graphic (.eps format).

Figure 2: A sample black and white graphic (.eps format) that has been resized with the `epsfig` 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!

Note that either **.ps** or **.eps** formats are used; use the `\epsfig` or `\psfig` commands as appropriate for the different file types.

3.4 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*

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

Figure 4: A sample black and white graphic (.ps format) that has been resized with the `psfig` command.

Table 3: 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 (.eps format) that needs to span two columns of text.

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*.

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[**?**] 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.

4. 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.

5. 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.

6. REFERENCES

[1] T. R. Gruber. Toward principles for the design of ontologies used for knowledge sharing? *International journal of human-computer studies*, 43(5):907–928, 1995.

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 `\additionalauthors` 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.