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VanWagenen

WRI 010

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-How is the CSE curriculum’s focus within colleges relevant when considering theories/data structures?

As technology continues to advance at a rapid pace, there will always be a need for more highly skilled individuals with a greater understanding of the concepts in order to figure out new breakthroughs, create programs which compile faster, and develop new machines to solve the everyday issues of society. These individuals cannot be found randomly or produced hastily, rather, they must spend years learning a curriculum which is dedicated to learning the actual science behind computers, programming, and engineering. In order for these individuals to be able to do their jobs, we need to give them the tools they need to do that job; a more in depth curriculum and more efficient peer to peer learning systems. Colleges must take this into consideration as computer science is a rapidly growing field which is serving as a bridge/mode of communication to other fields and can increase a university’s standing in terms of cooperative research.

Ex. Biological sciences need to analyze large amounts of data, form teams with computer scientists to store, build, and call this data for analysis using big data.

1. In order to start this, I would need to compare the CSE curriculum with that of the newer available jobs in computer science and see if these jobs have any core concepts which match the CSE curriculum.
   1. Find research information using the resources/databases provided by the library
   2. [**Synthesis Digital Library of Engineering and Computer Science**](http://library.ucmerced.edu/r/uclibs.org/PID/101011)
   3. [**ACM Digital Library**](http://library.ucmerced.edu/r/uclibs.org/PID/12617)
   4. [**CiteSeer**](http://library.ucmerced.edu/r/citeseerx.ist.psu.edu/)
   5. [**Academic Search Complete (EBSCO)**](http://library.ucmerced.edu/r/uclibs.org/PID/126936)
   6. [**BioMed Central**](http://library.ucmerced.edu/r/www.biomedcentral.com/inst/gateway/)
   7. [**CRCnetBase**](http://www.crcnetbase.com/action/showPublications?display=bySubject&category=40001565&expand=40001565)
2. Show examples of jobs in other fields which rely on computer science and engineering and cooperation.
   1. Synthetic Biology
   2. Bioengineering
   3. Medical Imaging Systems
   4. Information Security Analyst
3. Explain the necessity for proper resources to engage in research, as UC Merced is a research University.

Focusing on reviewing the CSE curriculum and seeing if it prepares the student for cooperative tasks, research and a proper understanding of the science is highly important as CSE can become a branch point for communication between majors and is growing at the same rate technology is growing. With this realization in mind, it is the department’s duty to efficiently allocate newly gained resources to sustain funding for special research projects, new tools and programs as well as establishing more in depth learning experiences that probe the mind instead of repetitive assignments. This as whole, will give the students of UC Merced more experience and will show them potential research opportunities/cooperation with other majors.

Annotated Bibliography

Humphrey, Jay D. *Style and Ethics of Communication in Science and Engineering*. N.p: Morgan & Claypool, 2009. Print. Synthesis Lectures on Engineering 9.

Humphreys text provides the argument that computer science/research is essentially just a handbook, a guide for researchers to analyze only to further their own analyses. This book provides a practical guide for the students to publish journals, create proposals and dissertations. He focuses on the aspect of style, communication and success in the workplace.

This text was written in a very casual manner as there weren’t that many instances of specific language being used. The aspects he spoke of were very broad and focused on terms like integrity and knowledge.

To use this in my essay, I will be able to focus on the CSE department instilling these values of integrity and cooperation within the students. Also I would be able to define research process and what students might be able to do after that research.

Mingrui Zhang, Eugene Lundak, Chi-Cheng Lin, Tim Gegg-Harrison “Interdisciplinary Application Tracks in an Undergraduate Computer Science Curriculum.” *Department Curriculum Committee.* Web. 23. Oct. 2014.

Within this text, the authors state the value of interdisciplinary research application and its effectiveness. Students of different majors/disciplines have the opportunity to work together and utilize their strengths to their advantage in order to produce quality research.

Their text was written with a very concise format as they had the most important identifiers within bold headings and included a broad variety of topics. This was primarily focused on expanding education to reach greater number of students and teaching them about cooperation.

Within my essay, I will use this interdisciplinary research applications to state how important the CSE field will be to communicate with other majors and increase the variety of research that can be done. By doing more research, the university can gain prominence and become more established and gain more students/faculty.

Hill, Thomas, Dr. "The Big Data Revolution And How to Extract Value from Big Data." CiteSeer. StatSoft, Inc, n.d. Web. 28 Oct. 2014.

Here, Dr. Thomas Hill describes the growing trend of Big Data and how its applications are being broadened to solve more problems and workarounds. Hill also states how this data relies on velocity, volume, and variety as most businesses depend on many different file formats and also relies the difference in capability when compared to older technology. He also mentions that Big data is used to optimize a process or solve problems.

The tone of this paper is one of a curious nature as hill tells us the new opportunities that are available with Big Data and how it will change computing. He also is very technical and descriptive within his writing as he explains many different methods for data collection. There is little commentary within this text but he includes analogies to help the reader grasp his points.

Now, I can use the examples of companies/institutions changing technologies to adapt to increasing data traffic to prove the necessity for more CS majors with more resources. Data is still increasing at a very rapid rate and there needs to be new ways to gather and analyze that data. There is also an example in which interdisciplinary methods are mentioned where business majors

Borrego, Maura, Daniel Boden, and Lynita Newswander. “Sustained Change: Institutionalizing Interdisciplinary Graduate Education.” *Journal of Higher Education.* 2014. *Academic Search Complete.* Web. 28 Oct. 2014.

The authors describe how interdisciplinary education methods are successful in solving problems within energy and environmental sustainability, globalization, health care, and poverty. The article also mentions how the tension between departments can stifle research capability and limit a university. They also state that changes in external sources such as organizations are helping to push this new learning method forward and garner more support amongst the educational community.

The tone of this paper is one in which is serious and primarily stresses the challenges that can be faced when not working cooperatively. The writing can be lengthy but does not include many technical terms. Instead, the authors focus on gathering as many sources/ data as possible and use it to strengthen their points such as the use of NFS IGERT, National Institute of Health, and Committee on Facilitating Interdisciplinary Research.

This paper will prove to strengthen my argument by highlighting the inefficiencies of the lack of cooperation between departments and how it can stifle research opportunities. I will demonstrate that the CS department utilizes resources from other departments to increase learning/opportunities and gain money for grants. I will also use this to specify a research project I am working on with Biology majors and how we communicate and function as a team.

Moore, Jason. *Biological Data Mining.* Hanover, New Hampshire: Taylor and Francis Group, LLC, 2010. Print.

This describes how human genetics has a history of using a variety of disciplines to gather research and form analyses on the body structure/function with respect to genetic code. There are many computational challenges when dealing with genetics as there is too much data to organize and collect efficiently and we need to determine which sequences out of thousands are important. With computer science, you can narrow down these genetic sequences and find the function of a certain gene/code.

Moore remains very analytical, describing these different processes and also the complications that may arise from their research methods. The author uses many types of complex terminology with the understanding that the reader already has prior knowledge and can research the information independently. The article is organized where the main points are underneath a bolded header and can be easily navigated through.

For my research, I will be able to use this as an example as the author described the complications when analyzing such large amounts of data. Specifically, they had troubles finding and narrowing down certain portions of code and needed CS to efficiently organize and store the information. They also describe a form of machine learning in which would learn to select attributes independent of main events which is something that is still being developed within the field of computer science.

Kay, David. “Informatics: a focus on computer science in context.” *Proceedings of the SIGCSE technical symposium* 36. *Acm Digital Library.* Web. 28 Oct. 2014.

This describes how the increasing popularity in computer science has led to the development of programs which are unnecessary and can throttle new research. He describes certain solutions in which universities should offer different types of computer science degrees and can have students specialize in different aspects. He mentions the aspect of informatics in which context is important as they attempt to use this data to create new successful solutions and approaches.

This tone is one in which is very less analytical in which the author focuses on commentary and becomes subjective within his writing. At times he provides data to support his claims and experiments but overall states opinions instead of facts. Here he attempts to probe the workings of informatics and how it can be pushed further within the US.

Within my own writing, I can expand on his sentiments in which he stated that the computer science field has become too broad and needs to focus on the important elements regarding data collection and the study of computer systems. I will use this as an example of the type of research/ curriculum that should be taught within school systems but is disregarded or minimalized. I will then use this to compare the future jobs and research opportunities which employ this kind of knowledge on a regular basis and highlight the necessity of this learning process.

Revision Letter:

* Within my previous draft, I had very repetitive elements such as Within my…. And so on. This gave my writing a very boring tone and created a disconnect with the reader. I have worked on rephrasing these sentences to provide variety and clarity.
* Removed sentences such as –
* Within the text…
* Here the author…
* The tone of this…