

# Research in Department of Computer and Information Science at UDEL

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## 1 Introduction

In this paper, the research areas of Computer and Information Science Department's faculty members at UDel are introduced and their current research projects are investigated.

## 2 Current Research at CIS

Prof. Sandra Carberry research interests are primarily on: natural language dialogue systems, user modeling and digital libraries. Currently, she is working on three active projects: recognize and convey communication goals, provide alternate access to information graphics and summarize, index and retrieve information graphics from a digital library which is supported by NSF grants [1].

Prof. Jingji Yu's main focus is on computer graphics and picture generation. In Computer Graphics Laboratory, he and his PhD students Liang Wei, Xiaolin Yang and Feng Li are doing research on three active projects on: computational photography, video surveillance and non-conventional rendering and modeling [5].

Prof. Errol Lloyd research interest focuses on the approximation algorithms for NP-Complete problems where the problems are mostly based on network design, scheduling, routing, and protocol design. Nowadays, he is working mainly on two problems. Bin packing problem is a resource scheduling problem which is NP-complete but where optimal packing can not be guaranteed in polynomial time. The second research is conducted in computer networks where the topology control in ad-hoc networks is investigated [6].

Prof. Lori Pollock research interests are compiler optimization, software testing and program analysis. Currently five ongoing projects are being researched by the people of HiperSpace lab. Those projects include: optimization of cluster parallel programs, online analysis through dynamic compilers, mobile code security, testing web applications, and NLP for concern mining and navigation. Current folks of HiperSpace lab are: Ben Breech, Anthony Danalis, Emily Gibson, Mike Jochen, Dave Shepherd, Sara Sprenkle and

Giriprasad Sridhara [11].

Bioinformatics is the main research area of Prof. Li Liao and he is interested in developing new algorithms and (statistical) learning methods that help solving biological problems. In his Bioinformatics Research Lab Roger Craig, Alvaro Gonzalez, Wenzhong Wang, Tapan Patel, and Laura Shankman are working on five ongoing projects nowadays. The main titles for the projects are as follows: homology detection protein family classification, probabilistic modeling for Bio Sequence, genome sequencing and assembly, system bioinformatics (prediction of protein-protein interactions), and comparative genomics (prediction of other regulatory elements) [9].

Distributed AI and Multi-Agent Systems are the research interests of Prof. Keith Decker. Currently investigated research problems are: 1) representing and reasoning about uncertain, time-oriented, resource limited environments 2) software agent architectures and organization that embody these solutions that adopt in dynamic environments 3) information gathering systems based on agent models and 4) understanding human organizational models computationability [4].

Prof. Daniel Chester is interested in knowledge representation. His current project with collaboration with Prof. Sandra Carberry is based on extracting useful information that are conveyed with graphs such as bar charts but is not mentioned in the text. The other projects of him are: parsing languages with free word order, image query system, and intelligent advising language system [3].

Prof. Stephen F. Siegel's main focus is on analysis and verification of concurrent and distributed software systems. He is interested in subjects such as testing, automated theorem proving and finite-state verification (FSV) for software verification. In FSV technique, first the program is modeled. Second, correctness properties of the model are formalized. Last, automated algorithmic techniques are used to verify that all executions of the model satisfy the properties [12].

The area of interests of Prof. Kathy McCoy are: artificial intelligence, natural language processing and applications for people with disabilities. Current projects super-

vised by Prof. McCoy are as follows: second language acquisition (ICICLE), augmentative communication (for people with communication disabilities), text summarization, multi-lingual sentence generation, and graph to text [7].

### 3 Conclusion

In this paper, the research areas of the CIS faculty and the current projects developed by faculty and their PhD students are presented. The labs and their members are also tried to presented as much as possible.

### References

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