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EDUCATION

Ph.D. Computer Science, Lehigh University

Dissertation: Investigation of the application of hard real-time scheduling algorithms for periodic message transmission protocols in surveillance networks.

M.S. Computer Science, Lehigh University

Thesis: Development of an object oriented & dynamically configurable instrumentation API to monitor the network communications of distributed applications.

B.S. Computer Engineering, Lehigh University

EMPLOYMENT

2004 → present: **Assistant Professor of Computer Science, Ithaca College**

Taught courses: C & Unix, algorithms and object-oriented programming, network modeling, network programming, computer networks, advanced algorithms.

2001 → 2004: **Visiting Instructor of Computer Science, Swarthmore College**

Taught courses: Discrete mathematics, principles of computer science, introduction to computation with Matlab, computer organization, data structures, algorithms, computer networks, discrete event simulation systems, complex networks.

ACADEMICALLY RELATED WORK EXPERIENCE

S1997 → F1999: **System/Network Administrator: VastLab, Lehigh University**

Maintenance of the Linux, Solaris, and MS Windows workstations and the local area network for Dr. Terry Boulton's Vision and Software Technology Lab.

S1996 → F1996: **Programmer: Accusort, Telford, PA**

Development of a novel software system to weigh cargo packets on conveyor belts automatically and on the fly.

F1993 → S1996: **Newsletter Editor: IEEE, Lehigh Valley Section**

GRANTS

\$149,104: Multidisciplinary Sustainability Modules: Integrating STEM Courses

NSF DUE-0837721, Tom Pfaff, Ali Erkan, Jason Hamilton, Michael Rogers. For the creation of multidisciplinary and sustainability themed educational modules for students from different disciplines working collectively, iteratively, but not necessarily simultaneously, over a set of online tools for exchanging data, code, reports, and expertise. June 2009 to June 2012.

\$900: H&S Educational Grant

For the purchase of a workstation capable of emulating three or more virtual computers for the network and system oriented courses of the CS Department. Spring 2008.

\$900: Ithaca Fund

(With Beth Clark Joseph) For the purchase a computer and wireless networking equipment to interface the Solar Trailer for publishing/logging control and charge data over the WWW as part of the sustainability initiative of the College. Fall 2005.

3 credits: Center for Faculty Research and Development Grant

Creation of a computer based system to better understand the academic interests and perspectives of incoming students. Fall 2009 or Spring 2010.

3 credits: Center for Faculty Research and Development Grant

(With Michael Twomey) For applying the results of the previous year's CFRD project for applying wiki systems in humanities pedagogy. Fall 2007.

3 credits: Center for Faculty Research and Development Grant

For gathering structural and evolutionary data from wiki sites in order to characterize their contributors. Fall 2006.

AWARDS, RECOGNITIONS

F2008/S2009: Level II Departmental (Computer Science) Merit Award

F2009/S2010: Level II Dean Merit Award

For H&S Senate work of the F2008-S2009 academic year.

F2006/S2007: Level II Departmental (Computer Science) Merit Award

S2007: Ithaca College Faculty Excellence Award Nomination

Sponsored by an undergraduate.

1995: Ph.D. Qualifier Exam Record

Only graduate student in the history of the EECS department at Lehigh University to earn a high-pass in the Databases, Compilers, Automaton and Formal Grammars.

S1994: Arthur E. Humphrey Teaching Assistant Award, Lehigh University

Recipient for Lehigh University Engineering College. This award is given once a year to a teaching assistant from each of the three undergraduate colleges of Lehigh University. Nominations are solicited from undergraduates to honor teaching excellence.

- Ali Erkan, Jason Hamilton, Tom Pfaff, and Michael Rogers. **Use of satellite imagery in multidisciplinary projects.** In *SIGCSE '10: Proceedings of the 41st SIGCSE technical symposium on Computer Science education*, pages XXX–XXX, New York, NY, USA, 2010. ACM.
- Ali Erkan, Sam Newmark (Math & CS '09, Ithaca College), and Nicolas Ommen (Math & CS '09, Ithaca College). **Exposure to research through replication of research: a case in complex networks.** In *ITiCSE '09: Proceedings of the 14th annual ACM SIGCSE conference on Innovation and technology in computer science education*, pages 114–118, New York, NY, USA, 2009. ACM.
- Ali Erkan. **TIG: A utility for generating course web pages and a case study for teaching data structures.** *Journal of Computing Sciences in Colleges*, 24(6):71–77, 2009.
- Ali Erkan and Diyan Gochev (CS '08, Ithaca College). **An image background detection project for a visual exploration of DFS and BFS.** In *SIGCSE '08: Proceedings of the 39th SIGCSE technical symposium on Computer science education*, pages 483–487, New York, NY, USA, 2008. ACM.
- Ali S. Erkan, T. J. VanSlyke (CS '07, Ithaca College), and Timothy M. Scaffidi (CS '07, Ithaca College). **Data structure visualization with LaTeX and Prefuse** (28% acceptance rate). In *ITiCSE '07: Proceedings of the 12th annual SIGCSE conference on Innovation and technology in computer science education*, pages 301–305, New York, NY, USA, 2007. ACM.
- Ali Erkan, Sigurd Teigen (CS and Math '08, Ithaca College). **Integration of OPNET modeler with external development tools.** *OPNETWORK 2006*, Washington DC.
- Ali Erkan, Zac Rider (CS '04, Swarthmore College). **Deterministic media access and bandwidth allocation for periodic streams.** *OPNETWORK 2003*, Washington DC.
- Ali Erkan, Joshua Hudner (CS '04, Swarthmore College). **A simulation based study of the Allen-Cunneen Approximation in queuing networks with non-Markovian traffic sources.** *OPNETWORK 2003*, Washington DC.
- T. E. Boulton, R. J. Micheals, X. Gao, P. Lewis, C. Power, W. Yin, A. Erkan. **Frame-rate omnidirectional surveillance and tracking of camouflaged and occluded targets.** *Proceedings Second IEEE Workshop on Visual Surveillance (VS'99)*, IEEE Computer Society, 1999.
- T. E. Boulton, R. J. Micheals, A. Erkan, P. Lewis, C. Power, C. Qain, and W. Yin. **Frame-Rate multi-body tracking for surveillance.** *Proceedings of the DARPA IUW*, November 1998.
- T. E. Boulton, R. J. Micheals, A. Erkan, P. Lewis, C. Power, C. Qain, and W. Yin. **Applications of omnidirectional imaging: multibody tracking and remote Reality.** *Proceedings of the IEEE WACV*, October 1998.

TECHNICAL REPORTS (LEHIGH UNIVERSITY)

- Ali Erkan, T.E. Boulton. **Survey of periodic real-time scheduling systems.**
- Ali Erkan. **A parallel recursive matrix inversion system using PVM.**
- Ali Erkan. **Dynamic interconnection topologies for concurrent systems.**

REGIONAL/NATIONAL PANELS AND PRESENTATIONS (participants from multiple states)

- Michael B. Smith and Ali Erkan (Ithaca College), Jeff McClurken and Jim Groom (University of Mary Washington). **Learning history in a digital age: some experiments with "digital natives"**. *2009 International Society for the Scholarship of Teaching and Learning Annual Meeting Emerging Approaches to Teaching and Learning with Technology Thread*, October 22-25, 2009, Indiana University.
- Ali Erkan, Jason Hamilton, Tom Pfaff, Michael Rogers. **Can you have social justice if your village is under water?** *The First Summit on Incorporating Social Justice and Service-Learning into the STEM Curriculum*, June 11-12, 2009, Ithaca College.
- David Gries, Michael Eckmann, Ali Erkan, and James Heliotis. **Discrete mathematics/structures: how do we deal with the late appreciation problem?** *Journal of Computing Sciences in Colleges*, 24(6):110112, 2009.
- Ali Erkan. **An object oriented and dynamically configurable instrumentation interface for monitoring distributed applications.** *Mid-Atlantic States Graduate Student Workshop on Programming Languages and Systems*, 1995.

LOCAL PRESENTATIONS (participants mostly from a single state)

- Ali Erkan, Teresa Zollo. **From fireflies to Facebook.** *Ithaca Today Sampler Session*, April 18, 2009.
- Ali Erkan, Michael Smith. **Wikis and student engagement.** *19th Annual Educational Technology Day*, March 23, 2009, Ithaca College.
- Ali Erkan, Michael Twomey. **Wiki systems in humanities pedagogy.** *Spring Faculty Conference*, May 15, 2008.
- Ali Erkan. **D2W: A program to automatically generate web pages for distribution of course material.** *Tri-College (Swarthmore, Bryn Mawr, Haverford) Math, Science & Technology Teaching Symposium*, May 2003, Bryn Mawr College.

STUDENT PRESENTATIONS BASED ON SPONSORED STUDENT RESEARCH

- Nick Ommen, Sam Newmark: **Exposure to research through replication of research: a case in complex networks**, *Whalen Symposium 2009*, Ithaca College. Also presented at the Hudson River Undergraduate Mathematics Conference, 2009.
- Emily Mitchell: **Identification of CpG Islands in genomic sequences**, *Virginia Commonwealth University Bioinformatics and Bioengineering Summer Institute*, Virginia, 2007. Project co-advised by Zhongming Zhao (Ph.D), VCU.

- Nick Ommen: **Integration through recurrence relations and its applications to calculus**, *Whalen Symposium 2007*, Ithaca College. Also presented at the Hudson River Undergraduate Mathematics Conference, 2007.
- Sigurd Teigen: **Integration of OPNET Modeler with external development tools**, *OPNETWORK 2006*, Washington DC.
- Nitin Rajan: **The Ithaca College Solar Trailer Project: A Mobile Power Source Concept**, *Whalen Symposium 2006*, Ithaca College.

ADVISED SENIOR PROJECTS

- Andrew Wyshak, Rodion Catargiu: **Geographic information systems**; S2009.
- Sam Newmark, Nicolas Ommen: **Complex networks simulations**; F2008.
- David Beiler, Alex Dragusin, Michael Philipone: **Creation of a GUI front-end for Octave** (co-sponsored with Osman Yürekli, John Macelli); S2008.
- Ross Skaliotis: **Implementation of a BGP Daemon**; F2007.
- Sigurd Teigen, Diyan Gochev: **A Comparison of RMS and DCS**; F2007.
- Michael Chealander, Alex Weber: **Beatboxing to MIDI using MaxMSP**; S2007.
- T.J. Van Slyke, Tim Scaffidi: **Java program visualization**; F2006.
- Colin Hinkley, Ryan Healey: **Evolution of wiki sites**; S2006.
- Rishi Gupta, Eric Salluci: **A VMWARE based virtual networking**; S2006.
- Ryan Weeks, Brian Kropa: **A comparison of DSR and AODV with JiST**; F2005.
- Alex Cain, Gregory Sibley: **Auto generated ADT visualizations**; F2005.

SERVICE

Students: Coach for CCSCNE 2007 programming contest team (Sigurd Teigen, Ross Skaliotis, Max Sipos, ranked 2nd out of 42 teams), coach for MCM 2007 (Can Coler, Kris Georgiev, honorable mention).

CS Dept: Certification (06), CS/BS major (06), CS1/CS2 assessment (S06), new CS minor (07), departmental search (S08), system/network administration for departmental Linux system, accounts, servers (2006 → present).

S2009: Paper reviewer for Innovation and Technology in Computer Science Education (ITICSE) '09 conference.

S2009: Member of all college Faculty Development advisory committee.

S2009: HS Faculty Senate representative to new marketing committee.

S2008: H&S Liberal Arts Education committee.

F2007 → S2009: H&S Faculty Senate; member of execute committee during 08-09.

F2007/S2008: Paper director for the Consortium for Computing Sciences in Colleges Northeastern Region (CCSCNE) Conference, 07.

COURSES TAUGHT AT ITHACA COLLEGE: Assistant Professor, Fall 2004-present

	Fall 2004	Spring 2005	Fall 2005	Spring 2006	Fall 2006	Spring 2007	Fall 2007	Spring 2008	Fall 2008	Spring 2009	Fall 2009 (scheduled)
COMP-105 Web Programming									•		
COMP-115 Discrete Mathematics	•										
COMP-171 Principles of Computer Science			•								
COMP-180 Java Programming								•			
COMP-190 Intro to Comp with Matlab							•		•	•	
COMP-190 Graphical Information Systems											•
COMP-210 Computer Organization						•					
COMP-220 Data Structures		•		•				•			•
COMP-311 Algorithms	•				•		•			•	
COMP-365 Computer Networks		•	•		•		•		•		•
COMP-490 Discrete Event Simulations				•							
COMP-490 Complex Networks						•					

- **COMP-190** is the 100 level topics courses and is thus used for “**Intro to Comp with Matlab**” and “**Geographic Information Systems**” despite their mutually exclusive content.
- **COMP-490** is the 400 level topics courses and is thus used for “**Discrete Event Simulations**” and “**Complex Networks**” despite their mutually exclusive content.

COURSES TAUGHT AT SWARTHMORE COLLEGE: Visiting Instructor, Spring 2001, Spring 2004

	Spring 2001	Fall 2001	Spring 2002	Fall 2002	Spring 2003	Fall 2003	Spring 2004
CS-21 C & UNIX	•	•	•	•	•		•
CS-35 Algorithms and OO Programming				•	•	•	
CS-97 Advanced Algorithms							•
CS-48/CS-97 Network Modeling	•	•					
CS-97 Network Programming	•						
CS-91/CS-97 Computer Networks	•		•			•	

- **CS-97** is the senior seminar course. I have though it three different ways which is why three different topics are listed under the same course name/number.
- **CS-48** and **CS-91** were to be the official course numbers for the network modeling and computer networks courses which were first covered as as topics in senior seminar.

- **COMP-115, Discrete Mathematics**
An introduction to the most common form of mathematics required in computer science. Topics include sets, functions, relations, matrix algebra, combinatorics and finite probability, recurrence relations, logic, mathematical induction, and algorithmic thinking.
- **COMP-171, Principles of Computer Science**
Introduction to the Computer Science and Computer Information Science majors. The main goal is to develop object oriented techniques to effectively solve problems using C++.
- **COMP-190, Introduction To Computation with MatLab - New Course**
A scientific problem oriented introduction to computation using the mathematics system MatLab. Most of the enrolled students are expected to be from the Physics department.
- **COMP-190, Geographic Information Systems - New Course**
This course covers the fundamentals of Geographic Information System (GIS) technology, with the emphasis placed on analysis, presentation, and GIS driven problem solving. Students complete a series of lab exercises that illustrate the typical steps in a GIS project. The course culminates with students carrying out their own GIS project.
- **COMP-210, Computer Organization**
An exposition of the central ideas in a computer system. Although the conceptual work is based on a simulation system, students also complete many small scale C programs in order to interact with an actual system. Topics include computer architecture, assembly language, operating systems, systems programming, processes, memory management, digital logic, and file systems.
- **COMP-220, Data Structures**
Continuation of "Principles of Computer Science" but the emphasis is now on data structures, their implementation, application, and efficiency. Topics include dynamic allocation, templates, comparison of alternative implementations of user-defined data structures, complexity, performance, recursion, and tree traversal algorithms.
- **COMP-311, Algorithms**
A formal treatment of program solving techniques. Topics include divide-and-conquer techniques, decrease-and-conquer, transform-and-conquer, dynamic programming, string matching, hashing, and greedy techniques. The last two weeks of the semester is an introduction of basic computability (tractability, P/NP/NP-complete classes).
- **COMP-365, Computer Networks**
Introduction to computer networks, centered around the underlying models, technologies, and protocols. The main case study is TCP/IP networks, although time is also spent on ATM networks to be exposed to a second design alternative. The hands-on component of the course is the development of a number of Java based networking programs.
- **COMP-490, Discrete Event Simulation Systems - New Course**
Follow-up to Computer Networks. As of the first offering, it is based on a semester long group-based research project related to scheduling algorithms and ad-hoc wireless networks. I designed this course for students interested in conducting simulations for networking research.
- **COMP-490, Complex Networks - New Course**
Follow-up to Computer Networks and Algorithms. Based on a formal study of the structure and function of technological (e.g., the Internet, the WWW), social (e.g., acquaintances, friendships), biological (e.g., metabolic pathways, food webs), informational (e.g., co-authorships, bibliographic interconnections), and cognitive (e.g., phonological associations) networks. I designed this course for students interested in graduate level research, specifically with a cross-disciplinary flavor.

- **C & Unix: The Imperative Paradigm**

Introduction to fundamental aspects of computing; focus on problem solving and software design concepts using the C programming language.

- **Algorithms and Object-Oriented Programming**

Object-oriented programming in Java, advanced data structures (priority queues, trees, hash tables, graphs, etc.) and algorithms, software design and verification.

- **Network Modeling** - **New Course**

Introduction to the modeling of data networks; survey of the subsets of probability and matrix algebra necessary for studying Markov models and queuing systems; survey of selected papers based on stochastic processes; introduction to network simulations.

- **Network Programming** - **New Course**

Introduction to network programming using UNIX interprocess communication mechanisms and TCP/IP sockets. Development of an application programming interface to mimic the behavior of wireless networks.

- **Computer Networks** - **New Course**

Survey of the key aspects of networking systems, ranging from data-link layer up to and including application layer. Investigation of network research trends through recent publications.

- **Advanced Algorithms** - **New Course**

Topics include graph flows, matrix operations, linear programming, Markov modeling, string matching, computational geometry, and approximation algorithms for NP complete problems. Each topic concludes with a paper that builds on the material covered for that topic. I designed this course for students interested in graduate level problem solving techniques; I plan to offer it at Ithaca College as well.