

Dr. Madalene Spezialetti
Computer Science Department
Trinity College
Hartford, CT 06106
(860) 297-2519
madalene.spezialetti@trincoll.edu

RESEARCH INTERESTS

Utilizing animation and video for computer science education, distributed monitoring and debugging

EDUCATION

Ph.D.	University of Pittsburgh <i>"A General Approach to Recognizing Event Occurrences in Distributed Systems"</i> (Advisor: J.P. Kearns; Co-Advisor: S. Treu)	12/89
M.S.	University of Pittsburgh <i>"Extensions of Lamport's Global State Determination Algorithm"</i> (Advisor: J.P. Kearns)	4/85
B.S.	University of Pittsburgh	4/83

ACADEMIC APPOINTMENTS

Associate Professor	Computer Science Department, Trinity College	5/98-present
Program Co-Director	Film Studies	7/20-present
Program Director	Film Studies	7/15-6/18
Chairperson	Computer Science Department, Trinity College	1/03-1/08
Assistant Professor	Computer Science Department, Trinity College	9/95-5/98
Assistant Professor	Electrical Engineering and Computer Science Department, Lehigh University (tenure approved pending Board of Trustees approval)	9/89-8/95

RESEARCH AWARDS

Outstanding Paper Award, Second IEEE International Conference on Engineering of Complex Systems: "Designing a Non-intrusive Monitoring Tool for Developing Complex Distributed Applications," W. Wu, M. Spezialetti, R. Gupta, 1996.

RESEARCH

FUNDED GRANTS (external)

Title: Problem Solving Using Video Scenarios
Amount: \$4,462.50
Agency: Association for Computing Machinery Special Interest Group in Computer Science Education
Period: September 2007-May 2008.

Title: On-line avoidance of Monitoring Intrusion in Distributed Systems
Agency: National Science Foundation
Amount: \$77,819
Period: August 1997-July2000
(This grant was submitted as a joint proposal with co-PI R. Gupta of the University of Pittsburgh. Approximate combined amount of the grant Trinity College/ University of Pittsburgh \$234,000).

Title: Research Experience for Undergraduates Supplement to On-line Avoidance of Monitoring Intrusion in distributed Systems
Agency: National Science Foundation
Amount: \$4,808
Period: September 1997-June 1998

Title: Monitoring and Intrusion Removal for Error Detection in Distributed Systems
Agency: NASA/Connecticut space Grant College Consortium
Amount: \$5,000
Period: June 1996-September 1996

Title: Efficient Techniques for Monitoring Distributed Computations
Agency: National Science Foundation
Amount: \$90,000
Period: June 1992-June 1995

Title: Distributed Systems Equipment (with H. Barada)
Agency: IBM, Endicott
Amount: \$30,000
Period: January 1994-June 1995

Title: Undergraduate Parallel Processing Laboratory (with H. Barada)
Agency: National Science Foundation, DUE-9251716
Amount: \$77,966
Period: August 1992-January 1995

Title: Research Experience for Undergraduates, supplement to
Efficient Techniques for Monitoring Distributed Computations
Agency: National Science Foundation
Amount: \$5000
Period: August 1993-August 1994

FUNDED GRANTS (internal)

Title: Flipping the Flipped Classroom , Faculty Technology Exploration Grant
Agency: Trinity College, Awarded Flipping the Flipped Classroom
Amount: \$2000
Period: September 2015- May 2016

Title: Digital Animation Techniques for Life Science Instruction
Agency: Trinity College/ Hughes Foundation
Amount: \$1800
Granted: February 2005

Title: Insuring the Correctness of Distributed Computer Programs
Agency: Trinity College
Amount: \$5,400
Period: June 1997-June1998

Title: Detecting Errors in Distributed Computations
Agency: Trinity College
Amount: \$6,000
Period: June 1996-June1997

GRANTS (Contributed as a Faculty Associate)

Title: CTW Consortium
Agency: Mellon Foundation
Amount: \$800,000
Period: June 2005-June 2008

Title: Acquisition of Gig-Op Simulation Computation Environment

Agency: National Science Foundation
Amount: \$780,313
Period: September 1994-August 1997

STUDENTS SUPPORTED BY GRANTS (full or partial)

Graduate: W.Wu, S. Bernberg, A. Yilderim, A. Erkan, K. Huang, E. Al-Eisa
Undergraduate: A. Budd, W. Raymond, C. Gigl, P. Caron, D. Herbst, S. Reed

PUBLICATIONS

JOURNALS/BOOKS

R. Gupta and M. Spezialetti, "A Compact Task Graph Representation for Real-Time Scheduling", *Journal of Real-Time Systems*, Vol. 10, pp. 71-102, 1996.

D. Weber, M. Spezialetti and H. Barada, "Vidnet: A Distributed Processing Methodology for Computer Animation," *Software Practice and Experience*, Vol. 26, No. 2, pp. 237-250, February, 1996.

M. Spezialetti and R. Gupta, "Loop Monotonic Statements," *IEEE Transactions on Software Engineering*, Vol. 21, No. 6, pp. 4970505, June 1995.

M. Spezialetti and J.P. Kearns, "Efficient Distributed Snapshots", chapter in *Global States and Time in Distributed Systems*, Z. Yang and T. A. Marsland, eds. Computer Society Press, pp. 16-22, 1993.

REFEREED CONFERENCE PUBLICATIONS

M. Spezialetti, "Putting People in the Picture", Building Requirements Gathering, Design Specification and Communication Skills with Video Scenarios", to be published in SIGCSE '21: Proceedings of the 52nd ACM Technical Symposium on Computer Science Education, March 2021, Pages 129–135, <https://doi.org/10.1145/3408877.3432553>

M. Spezialetti, "Bringing Creative Thinking Exercises into the Computing Classroom with Ready-to-Use Video Scenarios", SIGCSE '20: Proceedings of the 51st ACM

Technical Symposium on Computer Science Education, February 2020. (Demo Session)

M. Spezialetti, "Innovative Thinking: Encouraging Creative Diversity with Video Scenarios," 2018 IEEE Frontiers in Education Conference (FIE), San Jose, CA, USA, 2018, pp. 1-4, (Special Session).

M. Spezialetti, "Thinking about Asking: Encouraging a questioning approach to requirements gathering and problem solving," 2016 IEEE Frontiers in Education Conference (FIE), Erie, PA, USA, 2016, pp. 1-4.

M. Spezialetti, "How Much is that Hole?", SIGSCE Channel Video Exhibition, Special Interest Group in Computer Science Education (SIGCSE) 2011.

M. Spezialetti. "The Video Scenario Approach for Developing Computational and Entrepreneurial Thinking Skills. IEEE Frontiers in Education Conference (FIE) 2010.

M. Spezialetti, "Undercover Computer Guys", SIGSCE Channel Video Exhibition, Special Interest Group in Computer Science Education (SIGCSE) 2010.

M. Spezialetti, "Visit Virt-U: We Have Problems", SIGSCE Channel Video Exhibition, Special Interest Group in Computer Science Education (SIGCSE) 2010

M. Spezialetti, Gigl, C. "Mad Phd Makes Objects", Animated Video, SIGSCE Channel Video Exhibition, Special Interest Group in Computer Science Education (SIGCSE) 2009.

W. Wu, R. Gupta, and M. Spezialetti, "Experimental Evaluation of On-line Techniques for Removing Monitoring Intrusion," *SIGMETRICS 2nd Symposium on Parallel and Distributed Tools*, pp. 30-39, Oregon, August 1998.

W. Wu, M. Spezialetti, and R. Gupta, "A Protocol for Removing Communication Intrusion in Monitored Distributed Systems," *IEEE-CS 18th International Conference on Distributed Computing Systems*, pp. 120-129, Tilburg, The Netherlands, May 1998

W. Wu, M. Spezialetti, and R. Gupta, "On-line Avoidance of Communication Intrusion in Token Ring Networks," *IASTED 9th International Conference on Parallel and Distributed Computing and Systems*, pages 429-436, Washington, D.C., October 1997.

D. Weber, H. Barada, and M. Spezialetti, "Efficient Distributed Ray Tracing on a Cluster of Workstations," *Proceedings of the International Conference on Parallel and Distributed Processing Techniques and Applications*, pp. 1525-1535, 1997.

W. Wu, M. Spezialetti, and R. Gupta, "Designing a Non-intrusive Monitoring Tool for Developing Complex Distributed Applications, *IEEE 2nd International Conference on Engineering of Complex Computer Systems*, pages 450-457, Montreal, Canada, October 1996.

W. Wu, M. Spezialetti, and R. Gupta, "On-line Avoidance of the Intrusive Effects of Monitoring on Runtime Scheduling Decisions," *IEEE-CS 16th International Conference on Distributed Computing Systems*, pp. 216-223, Hong Kong, May 1996.

M. Spezialetti and S. Bernberg, "EVEREST: An Event Recognition Testbed," *16th IEEE International Conference of Distributed Computing Systems*, pp. 216-223, Hong Kong, May 1996.

M. Spezialetti and R. Gupta, "Loop Monotonic Statements," *IEEE Transactions on Software Engineering*, Vol. 21, No. 6, pp. 497-505, June 1995.

R. Gupta and M. Spezialetti, "Dynamic Techniques for Minimizing the Intrusive Effects of Monitoring Actions," *IEEE-CS 15th International Conference on Distributed Computing Systems*, pp. 368-376, Vancouver, Canada, June 1995.

R. Gupta and M. Spezialetti, "Busy-Idle Profiles and Compact Task Graphs: Compile-time Support for Interleaved and Overlapped Scheduling of Real-Time Tasks," *IEEE 15th Real-Time Systems Symposium*, pp. 86-96, San Juan, Puerto Rico, December 1994.

M. Spezialetti and R. Gupta, "Exploiting Program Semantics for Efficient Instrumentation of Distributed Event Recognitions," *IEEE 13th Symposium on Reliable Distributed Systems*, pp. 181-191, Dana Point, California, October 1994.

M. Spezialetti and R. Gupta, "Perturbation Analysis: A Static Analysis Approach for the Non-Intrusive Monitoring of Parallel Programs," *International Conference on Parallel Processing*, Vol. II, pp. 81-88, St. Charles, Illinois, August 1994

M. Spezialetti and R. Gupta, "Timed Perturbation Analysis: An Approach for Non-Intrusive Monitoring of Real Time Computations," *ACM SIGPLAN Workshop on Language, Compiler, and Tool Support for Real-Time Systems*, pp. 1-11, Orlando, Florida, June 1994.

M. Spezialetti and R. Gupta, "Debugging Distributed Programs through the Detection of Simultaneous Events," *IEEE-CS 14th International Conference on Distributed Computing Systems*, pp. 634-641, Poznan, Poland, June 1994.

R. Gupta and M. Spezialetti, "Towards a Non-Intrusive Approach for Monitoring Distributed Computations through Perturbation Analysis," *6th Annual Workshop on Languages and Compilers for Parallel Computing*, LNCS 768 Springer Verlag, pp. 586-601, Portland, Oregon, August 1993.

M. Spezialetti, "State Spans: A Methodology for Determining Real Simultaneity of Event Component States," *Proceedings of the International Conference on Parallel and Distributed and Systems*, 1992.

M. Spezialetti, "An Approach to Reducing Delays in Recognizing Distributed Event Occurrences", *Proceedings of the ACM/ONR Workshop on Parallel and Distributed Debugging*, pp. 151-162, 1991.

R. Gupta and M. Spezialetti, "Loop Monotonic Computations: An Approach for the Efficient Run-time Detection of Races," *SIGSOFT Symposium on Testing, Analysis, and Verification*, pp. 98-111, Victoria, Canada, October 1991.

M. Spezialetti and J.P. Kearns, "A General Methodology for the System State Characterization of Event Recognitions," *Proceedings of the 9th IEEE symposium on Reliable Distributed Systems*, pp. 175-184, 1990.

M. Spezialetti and J.P. Kearns, "Simultaneous Regions: A Framework for the Consistent Monitoring of Distributed systems," *Proceedings of the 9th IEEE International Conference on Distributed Computing Systems*, pp. 61-68, 1989.

M. Spezialetti and J.P. Kearns, "A General Approach to Recognizing Event Occurrences in Distributed Computations," *Proceedings of the 8th IEEE Conference on Distributed Computing Systems*, pp. 300-307, 1988.

M. Spezialetti and J.P. Kearns, "Efficient Distributed Snapshots," *Proceedings of the 6th IEEE International Conference on Distributed Computing Systems*, pp.382-388, 1986.

REFEREED SPECIAL SESSIONS

Spezialetti, Madalene, "Innovative Thinking: Encouraging Creative Diversity with Video Scenarios", *IEEE Frontiers in Education (FIE)* 2018.

REFEREED CONFERENCE POSTERS

Spezialetti, Madalene and Garten, Brian, "Add Some Action to the Output: A Ready-to-Use, Customizable Asset for Easily Adding Animation to Python Programs", *SIGCSE 2022: Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 2*, March 2022, pp. 1117, <https://doi.org/10.1145/3478432.3499131>.

Spezialetti, Madalene, "Beyond the Coder and the Code: An Exercise Structure for Fostering a People-Centered Problem-Solving Perspective with Video Scenarios

ITiCSE '21: Proceedings of the 26th ACM Conference on Innovation and Technology in Computer Science Education V. 2 June 2021, pp. 657, June 2021.

Spezialetti, Madalene. "Computing in Context: Video Scenarios for Recognizing and Utilizing Basic Computing Constructs", Special Interest Group in Computer Science Education Conference (SIGCSE) 2012.

Spezialetti, Madalene, "Video Scenarios: Developing a Connection between Computing and Creative, Real World Problem Solving", Special Interest Group in Computer Science Education Conference (SIGCSE) 2009.

WORKSHOPS

"Video Scenarios: Computing as Creative Problem Solving",
Grace Hopper Celebration of Women in Computing (GHC 2013)

Spezialetti, Madalene, "Video Scenarios: Listening, Discussing, Exploring, Solving -- A Participatory Approach for the Computing Classroom and Beyond", CCSNE 2010 Journal of Computing Sciences in Colleges. 25. 11-13.

PANELS

Baird, Bridget & Allen, Martin & Chung, Christine & Danner, Norman & Spezialetti, Madalene. "Expanding Student Enthusiasm for, and Understanding of, Introductory CS, CCSCNE, 2010. Journal of Computing Sciences in Colleges. 25. 100-101.

ABSTRACTS

M. Spezialetti and R. Gupta, "Toward a Non-Intrusive Approach to Debugging Distributed Memory Programs through Perturbation Analysis," *Debugging Workshop – Supercomputing '93*, p. 445, November 1993.

M. Spezialetti and R. Gupta, "An Integrated Approach for Event Recognition and Breakpoint State Characterization Utilizing Static Analysis," *ACM/ONR Workshop on Parallel and Distributed Debugging*, pp. 229-231, May 1993.

M. Spezialetti and R. Gupta, "Automatic Generation of Assertions for Detecting Errors in Parallel Programs in Shared-Memory Multiprocessors," *ACM/ONR workshop on Parallel and Distributed Debugging*, pp.266-268, May 1991.

TECHNICAL REPORTS

V. Jain, M. Spezialetti and R. Gupta, "An Approach for Monitoring Intrusion Removal in Real Time Systems," University of Pittsburgh Technical Report TR-97-18.

D. Weber, H. Barada, and M. Spezialetti, "Mirage: A Distributed System for Image Generation", King Fahd University of Petroleum and Minerals, Saudi Arabia.

WHITE PAPER

M. Spezialetti, "See You at the Holiday Inn", Trinity College Faculty Retreat, 2011.

INVITED TALKS

"Problem Solving using Video Scenarios", Special Interest Group in Computer Science Education Conference, Special Interest Group in Computer Science Education (SIGCSE 2012).

"Monitoring Distributed Computations." Mount Holyoke College, April 1996.

"Intrusion and Efficiency: Controlling the Effects of Monitoring Distributed Computations," University of Delaware, October 1994.

"Experiences with a Parallel Processing Laboratory," (with H. Barada) the Pennsylvania Association of Computer and Information Science Educators, Kutztown University, October 1993.

"State Analysis in Parallel and Distributed Computations," IBM Endicott, May 1991.

PROFESSIONAL ACTIVITIES

SESSION CHAIR

International Conference on Parallel Processing, August, 1994.

JOURNAL/CONFERENCE REVIEWS

IEEE Transactions on Software Engineering
IEEE Transactions on Parallel and Distributed Systems
Distributed Computing (Journal)
Software Practice and Experience

International Conference on Parallel Processing
International Conference on Parallel and Distributed Computing and Systems
International Conference on Parallel and Distributed Computing Systems
International Conference on Circuits and Systems

PROPOSAL REVIEWS

National Science Foundation, Division of Computer and Communications Research

FILMOGRAPHY

NARRATIVE FILMS (Shorts)

In the Air, Writer, Director, Editor, Cinematographer, Producer, 2016

Happy Times, Writer, Director, Editor, Cinematographer, Producer, 2015

To the Rescue, Writer, Director, Editor, Cinematographer, Producer, 2014

The Saviors, Writer, Director, Editor, Cinematographer, Producer, 2013

Aliens Arrive, Writer, Director, Editor, Cinematographer, Producer, 2012

Singing with Pavarotti, Writer, Director, Editor, Producer, 2011

DOCUMENTARY FILMS (Shorts)

Sam Kennedy, Producer, Director, Editor, 2019

Nancy Lublin, Producer, Director, Editor, 2019

Johnetta B. Cole, Producer, Director, Editor, 2018

William Scully, Producer, Director, Editor, 2018

Walter Harrison, Producer, Director, Editor, 2018

Ralph Katz, Producer, Director, Editor, 2018

David Dershaw, Producer, Director, Editor, 2017

Daniel Dennet, Producer, Director, Editor, 2017

La Tanya Langley, Producer, Director, Editor, 2017

Miriam Colon, Producer, Director, Editor, 2016

Michael Conforti, Producer, Director, Editor, 2016

William Marrimow, Producer, Director, Editor, 2016

The House and The Moon, Producer, Director, Editor, 2014

FILM AWARDS

Happy Times, Carnegie Museum of Art, 2-Minute Film Festival, Pittsburgh, PA, 2015,
Winner, Audience Choice Award

The House and The Moon, Carnegie Museum of Art, 2-Minute Film Festival, Pittsburgh, PA,
2014, 3rd Place, Audience Choice Award

The Saviors, Best of Pittsburgh 48 Hour Film Project, Pittsburgh 48 Hour Film
Project, Pittsburgh, Pa, 2013, Winner Best Actress

Aliens Arrive, Best of New Haven 48 Hour Film Project, New Haven 48 Hour Film
Project, New Haven, CT, 2012

FILM SCREENINGS

In the Air, Carnegie Museum of Art, 2-Minute Film Festival, Pittsburgh, PA, 2016

Happy Times, Carnegie Museum of Art, 2-Minute Film Festival, Pittsburgh, PA, 2015

The House and The Moon, Carnegie Museum of Art, 2-Minute Film Festival, Pittsburgh, PA, 2014

To the Rescue, Pittsburgh 48 Hour Film Project, Pittsburgh, PA, 2014

The Saviors, 2013 Best of Pittsburgh 48 Hour Film Project, Pittsburgh, PA, 2014

Aliens Arrive, Dreamland Film Festival, New Haven, CT, 2012

Aliens Arrive, Best of New Haven 48 Hour Film Project, New Haven, CT, 2012

Singing with Pavarotti, Hartford Flick Fest, 2012

PRESENTATIONS

M. Spezialetti, “The Language of Film”, presentation at Foundations of Visual Communication Workshop, University of Hartford, February 26, 2016.

TEACHING AND ACADEMIC ADVISING

NEW COURSES DEVELOPED

<u>Title</u>	<u>Level</u>	<u>Institution</u>
Topics in Distributed Computing	Graduate	Lehigh University
Distributed Computing	Undergraduate	Trinity College
Kinetic Content	Undergraduate	Trinity College
Hardware and Software Issues in Parallel Computing (with H. Barada)	Undergraduate	Lehigh University

COURSES TAUGHT/ COMPUTER SCIENCE

<u>Title</u>	<u>Level</u>	<u>Institution</u>
Theory Of Operating Systems	Graduate	Lehigh University
Topics in Distributed Computing	Graduate	Lehigh University

Distributed Computing	Undergraduate	Trinity College
Systems Software	Undergraduate	Trinity College
Machine Organization	Undergraduate	Trinity College
Introduction to Computing	Undergraduate	Trinity College
Data Structures and Algorithms	Undergraduate	Trinity College
Introduction to Internet Programming	Undergraduate	Trinity College
Senior Seminar	Undergraduate	Trinity College
Kinetic Content	Undergraduate	Trinity College
Event Driven Programming	Undergraduate	Trinity College
Software Engineering	Undergraduate	Trinity College
Operating System Design	Undergraduate	Lehigh University
Hardware and Software Issues in Parallel Computing	Undergraduate	Lehigh University
Data Structures	Undergraduate	Lehigh University
Introduction to Structured Programming	Undergraduate	Lehigh University

Ph.D. STUDENTS

W. Wu "Monitoring Intrusion Removal in Distributed Computations"
(co-advisor with R. Gupta at the University of Pittsburgh)

MASTERS THESIS/PROJECTS

D. Weber	Distributed Graphical Rendering for Computer Animation	1995
S. Bernberg	Design and Implementation of EVEREST: An Event Recognition Testbed	1994
D. Shooke	Parallel IC Design Verification: Distributed vs Multiprocessor Environment	1994
K. Huang	Distributed Event Monitor Interface	1994
A. Erkan	Object Oriented Approach to Event Monitoring	1994
T. Brown	Reducing Page Fault Delay in MIMD Distributed Virtual Shared Memory	1994
M. Brogi	Event Evaluation for Distributed Event Recognition	1993
J. Mitchel	Highly Efficient Computing in the Academic Domain	1991
D. Briesc	Object Oriented Interface to SECS II	1991

Ph.D. COMMITTEE MEMBERSHIP

H. Kim	Heterogeneous Distributed Processing	1996
N. Adar	Allocation and Scheduling of Partitioned Programs on Multicomputers	1994
R. Neogi	Parallel Logic Simulation	1992
J. Bigus	Adaptive Operating System Control Using Neural Networks	1992

SERVICE

COMMITTEES (Trinity College)

InfoSys Advisory Group
ITEC
Committee on Committees
General Education Council
Math Center Advisory Board
Film Studies Advisory Group
Mathematics Department Tenure Track Search Committee
Engineering Department Tenure Track Search Committee (2)
Film Studies Visiting Professor Search Committee (3, once as chair)
College Admissions and Exploration Program Panel: The Value of the Liberal Arts
College in the City

DOCUMENTARY SHORT FILMS (HONORARY DEGREE RECIPIENTS)

Nancy Lublin, 2019

Sam Kennedy, 2019

Johnetta B. Cole, 2018

William Scully, 2018

Walter Harrison, 2018

Ralph Katz, 2018

David Dershaw, 2017

Daniel Dennet, 2017

La Tanya Langley, 2017

Miriam Colon, 2016

Michael Conforti, 2016

William Marrimow, 2016

DEPARTMENT/PROGRAM CHAIR

Program Director, Film Studies

(7/15-6/18)

Co-Director, Film Studies

(7/20-present)

Department Chair, Computer Science Department

(1/03-1/08)