

Response to the ABET Final Statement

This report is a response to the final statement from the ABET Computing Accreditation Commission. In our initial response to the draft statement of findings received from the ABET CAC we addressed each of the shortcomings and provided our corrections and planned actions. We appreciate the Commission's thorough examination of our computing programs and the feedback that has been provided. Below, we describe the actions we have taken to address all the shortcomings.

Computer Science Program

Program Weakness

Criterion 3. Student Outcomes. The Student Outcomes Criterion requires the program enable students to attain, by the time of graduation, an understanding of professional, ethical, legal, security, and social issues and responsibilities. Though the curriculum addresses this characteristic, coverage of these topics is minimal. As a consequence, the program lacks the necessary strength of compliance with this criterion.

Action 1: Correction in the self-study. Inexplicably, one of our student learning outcomes (CSSO-10) was omitted from our self-study document. CSSO-10 states: "Demonstrate understanding of the ethical, legal and social issues associated with computing." We have integrated CSSO-10 into our overall assessment of student outcomes and have provided updates to the self-study document as an amendment (See ATTACHMENT 1).

Action 2: Additional information not included in the self-study. Our self-study document did not completely detail the extent to which our computer science curriculum covers professional, ethical, legal, security and social issues and responsibilities (Social and Professional Issues, SPI). The table (below) shows how seven core courses contribute to a total of 11.8 class hours dedicated to covering various SPI topics.

		Core Courses						
Topics	Hours	CSC 1500	CSC 1600	CSC 1650	CSC 2560	CSC 2600	CSC 3100	CSC 4400
Social & Professional Issues total hours	11.8	3.0	0.6	0.7	1.0	1.5	1.0	4.0
History of computing	4.7	1.0	0.3	0.4	0.5	1.5	1.0	
Social context of computing	1.0	0.5			0.5			
Methods & tools of analysis	0.8		0.3					0.5
Professional & ethical responsibilities	1.5	0.5						1.0
Risks & liabilities of comp-based systems	2.6	0.5		0.1				2.0
Intellectual property	1.0	0.5						0.5
Economic issues in computing	0.2			0.2				

Action 3: Creation of one credit hour course. In our initial response to the ABET, we have submitted two proposals to All University Committee (AUC):

1. A new course CSC4002 Ethical Issues in Computer Science. This is a one credit course provides 12.5 hours of additional instruction dedicated to SPI (Social and Professional Issues) topics.
2. Making CSC4002 required course to all students majoring in computer science and computer information systems.

AUC approved our proposals and the course has been offered in spring of 2015. Student learning outcomes for this course have been integrated into our assessment plan (CSSO-10). With the addition of this course, our computer science curriculum will provide a total of 24.3 hours of instruction in SPI topics. Approximately 16 hours of SPI coverage has been documented and assessed.

The course syllabus and assessment result for spring of 2015 are attached (ATTACHMENT 2). The course has been added into the list of the courses that will cover all of our student outcomes (See ATTACHMENT 1).

Program Weakness

Criterion 6. Faculty. This criterion requires that the faculty serving in the program be of sufficient number to maintain continuity, stability, oversight, student interaction, and advising. In addition to the regular teaching load of four undergraduate courses per semester, some faculty members teach as many as two additional graduate courses. Requiring faculty members to teach an excessive number of courses in a single semester may impact the ability of the faculty to maintain continuity, stability, oversight, student interaction, and advising.

We recognize that teaching two graduate classes concurrent with a full undergraduate day course load is not optimal. However, we can report at this time that significant progress has been made on the faculty load issue.

Action 1: Re-organization of scheduling of graduate courses: One aspect of our solution has been a re-organization of the way we offer graduate courses which was phased in last year (AY2012-13) at the time we were preparing the self-study document. The re-organization has now been fully implemented. It provides a predictable schedule of course offerings to help both students and faculty plan wisely. The plan has been in place for a calendar year (2013) and during this year no faculty member needed to take on more than one graduate class each semester in addition to their day load. Also, the new department policy requires that each full time faculty member is only allowed to take one graduate course per semester as overload. Additional graduate course(s) will be counted as undergraduate day load.

Action 2: New hiring. The department has successfully hired a new full-time tenure track faculty Ricky Sethi in fall 2014. Dr. Sethi has a Ph.D. in Computer Science from the University of California (Riverside) and an M.S. in Physics/Business Information Systems from University of Southern California. His degree in Business Information Systems makes him well-qualified to serve in the area of CIS. He gained some teaching experience as a graduate student and has been concurrently teaching and doing research continuously since receiving his Ph.D. in 2009. Before he joined the department he was a postdoctoral fellow working in the area of Scientific Workflow at UMass Medical School in Worcester with a joint appointment at UMass Amherst. Dr. Sethi's research related to workflow demonstrates his drive towards standardizing processes that lead to consistent analysis and results. His research interests

clearly make him well suited to the fields of CS and CIS. Dr. Sethi's curriculum vitae is attached (ATTACHMENT 4).

Dr. Sethi has been mainly assigned to teach CIS/CS courses.

Computer Information Systems Program

Program Deficiency

Criterion 6, Faculty. The information systems program criteria states that some full-time faculty, including those responsible for the IS curriculum development, hold a terminal degree in information systems. There are no faculty members who hold a terminal degree in information systems. One faculty member with terminal degree in mathematics and extensive business experience bears primary responsibility for the program. A faculty member who retired in 2011-2012 was to be replaced with a person holding a terminal degree in information systems, but that has not occurred. The program does not comply with the criterion.

We are pleased to report that our department has successfully hired a full-time tenure-track CIS faculty. Dr. Sethi has a Ph.D. in Computer Science from the University of California (Riverside) and an M.S. in Physics/Business Information Systems from University of Southern California. His degree in Business Information Systems makes him well-qualified to serve in the area of CIS. He gained some teaching experience as a graduate student and has been concurrently teaching and doing research continuously since receiving his Ph.D. in 2009. Before he joined the department he was a postdoctoral fellow working in the area of Scientific Workflow at UMass Medical School in Worcester with a joint appointment at UMass Amherst. Dr. Sethi's research related to workflow demonstrates his drive towards standardizing processes that lead to consistent analysis and results. His research interests clearly make him well suited to the field of CIS. Dr. Sethi's curriculum vitae is attached (ATTACHMENT 4).

Dr. Sethi was assigned to teach

- CSC1500 Computer Science I and CSC2400 Database Systems in fall 2014, and
- CSC1550 Computer Science II, and CSC3450 Local Area Networks in spring 2015.

All the courses are required CIS core courses.

Program Weakness

Criterion 3, Student Outcomes. The Student Outcomes Criterion requires the program enable students to attain, by the time of graduation, an understanding of professional, ethical, legal, security, and social issues and responsibilities. Though the curriculum addresses this characteristic, coverage of these topics is minimal. As a consequence, the program lacks the necessary strength of compliance with this criterion.

Action 1: Correction in the self-study. Inexplicably, one of our student learning outcomes (CSSO-10) was omitted from our self-study document. CSSO-10 states: "Demonstrate understanding of the ethical, legal and social issues associated with computing." We have integrated CSSO-10 into our overall

assessment of student outcomes and have provided updates to the self-study document as an amendment (See ATTACHMENT 3).

Action 2: Additional information not included in the self-study. Our self-study document did not completely detail the extent to which our computer information systems curriculum covers professional, ethical, legal, security and social issues and responsibilities (Social and Professional Issues, SPI). The table (below) shows how five core courses contribute to a total of 11.5 class hours dedicated to covering various SPI topics.

Topics	Hours	Core Courses				
		CSC 1400	CSC 1500	CSC 2560	CSC 3710	CSC 4700
Social & Professional Issues total hours	11.5	3.0	3.0	1.0	3.0	1.5
History of computing	2.0	0.5	1.0	0.5		
Social context of computing	1.0		0.5	0.5		
Methods & tools of analysis	2.0				1.0	1.0
Professional & ethical responsibilities	2.5	1.0	0.5		0.5	0.5
Risks & liabilities of comp-based systems	0.5		0.5			
Intellectual property	1.5	0.5	0.5		0.5	
Economic issues in computing	2.0	1.0			1.0	

Action 3: Creation of one credit hour course. In our response to the ABET, we have submitted two proposals to All University Committee (AUC):

1. A new course CSC4002 Ethical Issues in Computer Science. This is a one credit course that will provide 12.5 hours of additional instruction dedicated to SPI (Social and Professional Issues) topics.
2. Making CSC4002 required course to all students majoring in computer science and computer information systems.

AUC approved our proposals and the course has been first offered in spring of 2015. Student learning outcomes for this course have been integrated into our assessment plan (CISSO-10). The course syllabus and assessment result for spring of 2015 are attached to this report (ATTACHMENT 2). With the addition of this course, our computer information systems curriculum will provide a total of 24.0 hours of instruction in SPI topics. Approximately 16 hours of SPI coverage has been documented and assessed.

Program Concern

Criterion 6. Faculty. This criterion requires that the faculty serving in the program be of sufficient number to maintain continuity, stability, oversight, student interaction, and advising. In addition to the regular teaching load of four undergraduate courses per semester, some faculty members teach as many as two additional graduate courses. Having faculty members teach an excessive number of courses in a single semester may potentially impact the ability of the faculty to maintain continuity, stability, oversight, student interaction, and advising.

We recognize that teaching two graduate classes concurrent with a full undergraduate day course load is not optimal. However, we can report at this time that significant progress has been made on the faculty load issue.

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Dr. Sethi has been mainly assigned to teach CIS/CS courses.

Conclusion

The ABET draft statement of findings has been very helpful in identifying areas of deficiency, weakness, and concern within our CS and CIS programs. We have addressed all of these areas. Our goal is to provide the best possible experience for our students to help them be fully prepared upon graduation. We believe that the additional information and initiatives described above demonstrate our dedication to maintaining ABET accreditation for our programs. We thank you for your excellent feedback and look forward to maintaining programs that meet ABET criteria.

ATTACHMENT 1 – Amendment to CS Self-Study Document

1. CRITERION 3. STUDENT OUTCOMES

Page 12: Added CSSO-10 in the table showing the relationship of Program Student Outcomes to Program Educational Objectives and how CSSO-10 aligns with each of the Program Educational Objectives.

[illegible]

Page 13: Updated table and added CSSO-10 showing how it is correlated to the ABET Student Characteristics (a) through (k).

General Criteria	Correlation with CSSO									
	1	2	3	4	5	6	7	8	9	10
(a) An ability to apply knowledge of computing and mathematics appropriate to the discipline	X	X	X	X	X	X	X		X	
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution		X	X	X	X	X	X		X	
(c) An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs		X	X	X	X	X	X	X	X	
(d) An ability to function effectively on teams to accomplish a common goal				X			X	X	X	
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities		X				X	X		X	X
(f) An ability to communicate effectively with a range of audiences							X	X	X	
(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society							X		X	X
(h) Recognition of the need for and an ability to engage in continuing professional development		X	X	X	X	X	X		X	
(i) An ability to use current techniques, skills, and tools necessary for computing practice.	X	X	X	X	X	X	X		X	
Specific Criteria: CS										
(j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.	X	X	X		X	X	X		X	
(k) An ability to apply design and development principles in the construction of software systems of varying complexity.		X			X	X	X		X	

[illegible]

3. APPENDIX A – Course Syllabi

The mapping table of course objectives to CS student outcomes in the outlines of the following courses are subject to change due to the addition of CSSO-10.

CSC 1500 Computer Science I
 CSC 1600 Introduction to Electronics
 CSC 1650 Digital Electronics
 CSC 2560 Systems Programming
 CSC 2600 Computer Organization
 CSC 3100 Operating Systems
 CSC 4400 Software Engineer

CSC1500:

	CSS01	CSS02	CSS03	CSS04	CSS05	CSS06	CSS07	CSS08	CSS09	CSSO10
CO1										Y
CO2					Y					Y
CO3					Y					
CO4		Y			Y		Y			
CO5		Y			Y		Y			
CO6		Y			Y		Y			
CO7		Y			Y		Y			
CO8		Y			Y		Y			
CO9		Y			Y		Y			

CSC1600:

	CSS01	CSS02	CSS03	CSS04	CSS05	CSS06	CSS07	CSS08	CSS09	CSSO10
CO1	Y									Y
CO2	Y									Y
CO3	Y							Y	Y	Y
CO4	Y									
CO5	Y									Y
CO6	Y									
CO7	Y									

CSC1650:

	CSSO1	CSSO2	CSSO3	CSSO4	CSSO5	CSSO6	CSSO7	CSSO8	CSSO9	CSSO10
CO1	Y									Y
CO2		Y	Y							Y
CO3		Y	Y	Y						Y
CO4		Y	Y	Y						
CO5		Y	Y	Y	Y					Y
CO6		Y	Y	Y						

CSC2560:

	CSS01	CSS02	CSS03	CSS04	CSS05	CSS06	CSS07	CSS08	CSS09	CSS010
CO1		Y			Y					Y
CO2		Y			Y					
CO3		Y			Y					
CO4		Y			Y					
CO5					Y					
CO6					Y		Y		Y	Y
CO7					Y					

CSC2600:

	CSS01	CSS02	CSS03	CSS04	CSS05	CSS06	CSS07	CSS08	CSS09	CSS010
CO1	Y	Y	Y						Y	Y
CO2		Y			Y					
CO3	Y	Y	Y							
CO4		Y	Y						Y	
CO5				Y	Y				Y	
CO6				Y						
CO7	Y	Y		Y						
CO8										

CSC3100:

	CSS01	CSS02	CSS03	CSS04	CSS05	CSS06	CSS07	CSS08	CSS09	CSS010
CO1						Y				Y
CO2						Y				
CO3						Y				
CO4						Y				
CO5						Y				
CO6						Y				Y

CSC4400:

	CSS01	CSS02	CSS03	CSS04	CSS05	CSS06	CSS07	CSS08	CSS09	CSS010
CO1										Y
CO2							Y			Y
CO3							Y	Y		Y
CO4							Y	Y		
CO5							Y	Y		
CO6							Y	Y		
CO7							Y	Y		Y
CO8							Y	Y		
CO9					Y			Y	Y	

ATTACHMENT 2 – CSC4002 ETHICS COURSE SYLLABUS and ASSESSMENT DATA

Syllabus: Ethical Issues in Computer Science

Course description

This course covers various ethical issues that arise as a result of increasing use of computers in contemporary society. Topics include methodology, tools and frameworks for analysis of ethical issues in Computer Science, social and ethical context of computing, professional and ethical responsibilities, risks and liabilities of safety-critical systems, privacy and civil liberties, social implications of the internet and cyber-security.

Course Objectives

By the end of the class students will learn to:

1. Identify ethical issues in Computer Science
2. Understand how to recognize and evaluate ethical choices in a modern computerized world.
3. Understand professional and ethical responsibilities defined in the ACM Professional Code of Ethics
4. Understand intellectual property rights, privacy and civil liberties, cyber-security, social and ethical implications of new technologies.
5. Improve presentation skills

Textbook

Computer Ethics, Fourth Edition, by Deborah Johnson. ISBN-13: 978-0131112414

Topical Outline

1. Ethical frameworks for analysis of ethical issues in Computer Science.
2. ACM Professional Code of Ethics: professional and ethical responsibilities in a computerized society
3. Computer Security. Risks and liabilities of safety-critical systems.
4. Intellectual Property, Privacy and Cybercrimes.
5. The Digital Divide.
6. Digital Identity and Digital Communities.
7. Social Implications of Internet.
8. Our Dependence on Cyber-technology
9. Student's term papers discussion

Term paper

During the semester students will be working on a term paper that has to address any topic related to ethical issues in Computer Science

Matching Objectives with Assessment

Objective 1-- Test 1, Term paper
Objective 2-- Test 1, Term paper
Objective 3-- Test 3
Objective 4-- Test 4, Test 5, Term paper
Objective 5—Term paper

Evaluation and Grading Policy

Term paper	60 %
Five Tests	40%

Academic Dishonesty Policy

You can discuss ideas and strategies with anybody who is willing to participate in the discussion, however, once you start writing, you have to do it completely by yourself. You can discuss with me your challenging ideas and request some help which will be provided only if I can see that you work hard on your assignment. You must acknowledge everyone who helped you on the design stage of the project. Grade 0.0 will be given for an exam or an assignment for violating the University Academic Dishonesty Policy.

Learning Disabilities.

Every attempt will be made to accommodate students with documented disabilities. Accommodation must be requested before the 2nd class meeting.

CSC4002 Assessment Data (Spring 2015)

	How Measured			Target %tile scoring better than 70%	Actual %tile	Action taken
Performance Indicators (Course Objectives)	Term	Course	Embedded Tool(s)			
Identify ethical issues in Computer Science	Sp15	C4002	Test 1, Term Paper	80%	90%	
Understand how to recognize and evaluate ethical choices in a modern computerized world.	Sp15	C4002	Test 1, 2, Term Paper	80%	85%	
Understand professional and ethical responsibilities defined in the ACM Professional Code of Ethics	Sp15	C4002	Test 3	80%	80%	
Understand intellectual property rights, privacy and civil liberties, cyber-security, social and ethical implications of new technologies.	Sp15	C4002	Tests 4,5, Term Paper	80%	95%	
Improve presentation skills	Sp15	C4002	Term Paper	80%	100%	

ATTACHMENT 3 – Amendment to CIS Self-Study Document

1. CRITERION 3. STUDENT OUTCOMES

Page 12: Added CSSO-10 in the table showing the relationship of Program Student Outcomes to Program Educational Objectives and how CSSO-10 aligns with each of the Program Educational Objectives.

	PEO Alignment Strength (0 – 2)						
Program Student Outcomes	PEO-1	PEO-2	PEO-3	PEO-4	PEO-5	PEO-6	PEO-7
CISSO-1 - Demonstrate proficiency in relevant aspects of mathematics and principles of CIS.	2	2	1	1	0	0	1
CISSO-2 - Demonstrate business and systems programming skills.	2	2	1	0	0	0	1
CISSO-3 - Demonstrate skills in management, accounting, and financial reporting.	0	2	1	2	1	1	1
CISSO-4 - Demonstrate proficiency in the design and implementation of database systems.	2	1	2	2	0	0	1
CISSO-5 - Demonstrate excellence in oral and written communication.	1	1	2	0	2	2	1
CISSO-6 - Demonstrate proficiency in systems design and implementation methods.	1	1	2	1	2	2	1
CISSO-7 - Demonstrate proficiency in data communications and networking.	2	0	2	1	0	0	1
CISSO-8 - Demonstrate the ability to work in teams.	0	2	2	0	1	2	1
CISSO-9 - Demonstrate the ability to learn after leaving the university.	1	2	2	1	1	1	2
CSSO-10 Demonstrate understanding of the ethical, legal and social issues associated with computing.	0	1	1	2	0	1	1
Student Outcomes:							
These are statements that describe what students are expected to know and/or be able to do by the time of graduation. If students have achieved these outcomes, it is anticipated that they will be able to achieve the educational objectives after graduation.							

Page 13: Updated table and added CSSO-10 showing how it is correlated to the ABET Student Characteristics (a) through (j).

General Criteria	Correlation with CSSO									
	1	2	3	4	5	6	7	8	9	10
(a) An ability to apply knowledge of computing and mathematics appropriate to the discipline	X	X	X	X		X	X		X	
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution	X	X	X	X		X	X	X	X	X
(c) An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs		X	X	X		X	X	X	X	X
(d) An ability to function effectively on teams to accomplish a common goal			X	X	X	X	X	X		
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities	X	X	X	X		X	X		X	X
(f) An ability to communicate effectively with a range of audiences			X	X	X			X		
(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society	X		X						X	X
(h) Recognition of the need for and an ability to engage in continuing professional development						X	X		X	
(i) An ability to use current techniques, skills, and tools necessary for computing practice.		X		X		X	X		X	
Specific Criteria: CS										
(j) An understanding of processes that support the delivery and management of information systems within a specific application environment. [IS]			X	X		X	X		X	

2. CRITERION 4. CONTINUOUS IMPROVEMENT

Page 14: Added the new created course CSC4002 in the list of key courses which contribute to the assessment.

BSAD 2010 Intro to Financial Reporting
 BSAD 2020 Intro to Managerial Accounting
 CSC 1400 Computer Information Systems
 CSC 1900 Discrete Math
 CSC 2560 Systems Programming
 CSC 2700 Business Programming
 CSC 3400 Data Communications and Networking

CSC 3450 Local Area Networks
 CSC 3710 Systems Analysis Methods
CSC 4002 Ethical Issues in Computer Science
 CSC 4700 Systems Design and Implementation

Page 15: Updated table of courses that will cover all of our student outcomes. The newly created course CSC4002 will be added into the two year cycle in the future assessments.

CIS Student Outcomes	Courses used to assess student outcomes										
	C1400	C2560	C2700	C3400	C3450	B2010	B2020	C3710	C4700	C1900	C4002
1 - Proficiency in Math and CIS principles.	X									X	
2 - Business and systems programming skills.		X	X								
3 - Management, accounting, and financial reporting.						X	X				
4 - Design and implementation of database systems.									X		
5 - Excellence in oral and written communication.									X		
6 - Systems design and implementation methods.								X	X		
7 - Data communications and networking skills.				X	X						
8 - Teamwork								X	X		
9 - Lifelong learning								X	X		
10 - Ethical, legal and social issues associated with computing.											X

3. APPENDIX A – Course Syllabi

The mapping table of course objectives to CIS student outcomes in the outlines of the following courses are subject to change due to the addition of CSSO-10.

CSC 1400 Computer Information Systems
 CSC 1500 Computer Science I
 CSC 2560 Systems Programming
 CSC 3710 Systems Analysis and Design
 CSC 4700 Systems Design and Implementations

CSC1400:

	CISS01	CISS02	CISS03	CISS04	CISS05	CISS06	CISS07	CISS08	CISS09	CISSO10
CO1	Y									Y
CO2		Y				Y				Y
CO3							Y			
CO4				Y						Y
CO5					Y			Y		
CO6			Y							
CO7							Y			Y
CO8		Y	Y			Y				Y

CSC1500:

	CISS01	CISS02	CISS03	CISS04	CISS05	CISS06	CISS07	CISS08	CISS09	CISSO10
CO1										Y
CO2		Y								Y
CO3		Y								
CO4		Y								
CO5		Y								
CO6		Y								
CO7		Y								
CO8		Y								
CO9		Y								

CSC2560:

	CISS01	CISS02	CISS03	CISS04	CISS05	CISS06	CISS07	CISS08	CISS09	CISSO10
CO1		Y								Y
CO2		Y								
CO3		Y								
CO4		Y								
CO5		Y								
CO6		Y				Y				Y
CO7		Y								

CSC3710:

	CISS01	CISS02	CISS03	CISS04	CISS05	CISS06	CISS07	CISS08	CISS09	CISSO10
CO1			Y		Y	Y		Y	Y	Y
CO2		Y			Y			Y	Y	Y
CO3		Y	Y		Y			Y	Y	
CO4					Y	Y		Y	Y	Y
CO5					Y	Y		Y	Y	
CO6		Y			Y	Y		Y	Y	Y

CSC4700:

	CISS01	CISS02	CISS03	CISS04	CISS05	CISS06	CISS07	CISS08	CISS09	CISSO10
CO1		Y	Y		Y	Y		Y	Y	Y
CO2				Y	Y	Y		Y	Y	
CO3					Y	Y	Y	Y	Y	Y
CO4		Y	Y	Y	Y	Y	Y	Y	Y	
CO5				Y	Y	Y	Y	Y	Y	Y
CO6		Y			Y	Y	Y	Y	Y	Y
CO7					Y	Y		Y	Y	Y

ATTACHMENT 4 – Dr. Ricky Sethi’s CV

Ricky J. Sethi	Curriculum Vitae 2015
CONTACT	Fitchburg State University 160 Pearl Street Fitchburg, MA 01420 w: research.sethi.org e: rickys@sethi.org p: 978.665.3703
RESEARCH INTERESTS	My research uses fundamental ideas from machine learning and computational science to study crowds in video and online communities. I develop theoretical and applied models/algorithms to examine problems in: • Computer Vision: physics-based methods for group analysis in video • Data Science: bioinformatics and semantic workflows for multimedia analysis • Social Computing: virtual communities and science learning group collaboration
EDUCATION	• Ph.D., Computer Science 2004 - 2009 University of California, Riverside Adviser: Amit K. Roy-Chowdhury Committee: Eamonn J. Keogh and Christian R. Shelton Area of Study: Artificial Intelligence/Computer Vision • M.S., Physics/Business (Information Systems) 1999 - 2001 University of Southern California • B.A., Molecular and Cellular Biology, Neurobiology (Physics minor) 1996 University of California, Berkeley
ACADEMIC APPOINTMENTS	• Assistant Professor of Computer Science 2014 - Present Fitchburg State University • Director of Research 2013 - Present The Madscl Network • Team Lead for SNHU Online 2013 - Present <i>Adjunct Professor</i> Southern New Hampshire University • Research Scientist 2014 <i>Postdoctoral Associate</i> UMass Amherst/UMass Medical School • NSF Computing Innovation Fellow 2010 - 2013 University of California, Los Angeles University of Southern California - Information Sciences Institute • Lead Integration Scientist 2008 - 2010 <i>Postdoctoral Scholar, 2009 - 2010</i> <i>Research Associate, 2008 - 2009</i> University of California, Riverside

- **Research Intern** 2006
Physics Department, United States Coast Guard Academy
Department of Homeland Security (DHS)
The Washington Center
- **Graduate Student Instructor** 1999 - 2001
University of Southern California
- **Research Intern** 1994 - 1995
Calvin Laboratories, Lawrence Berkeley National Laboratory
Department of Energy (DOE)
- **Engineering Aide** 1993 - 1995
Center for EUV Astrophysics, University of California, Berkeley
National Aeronautics and Space Administration (NASA)

GRANTS AND AWARDS

Grants

- **NSF Computing Innovation Fellowship** 2010 - 2012.\$285,371
NSF Award 1019343/Sub Award CIF-B-17 (acceptance rate < 8%)
"Machine Learning Framework for Social Computing and Collective Intelligence"
- **Faculty Technology Grant** 2004.\$5,000
DeVry University
"On-Line, Interactive Computer-based Physics Laboratory"

Awards

- **CTL Innovation Award** 2015
Center for Teaching and Learning
Fitchburg State University
- **IEEE Students Society Award for Best Instructor** 2003-2006
IEEE Students Society
DeVry University

SELECTED PUBLICATIONS (FULL PUBLICATIONS LIST AT END)

Journals

- [S4] Balaji Polepalli Ramesh, **Ricky J. Sethi**, and Hong Yu, *Figure-Associated Text Summarization and Evaluation*, PLOS ONE, 2014.
- [S3] **Ricky J. Sethi**, Hyunjoon Jo, and Yolanda Gil, *Structured Analysis of the ISI Atomic Pair Actions Dataset using Workflows*, SI: SAHAR, Pattern Recognition Letters, 2013.
- [S2] Ayelet Baram-Tsabari, **Ricky J. Sethi**, Lynn Bry, and Anat Yarden, *Asking scientists: A decade of questions analyzed by age, gender, and country*, Science Education, 2008.
- [S1] Ayelet Baram-Tsabari, **Ricky J. Sethi**, Lynn Bry, and Anat Yarden, *Using questions sent to an Ask-A-Scientist site to identify children's interests in science*, Science Education, 2006.

Book Chapters

- [SB3] **Ricky J. Sethi**^{*}, Nandita M. Nayak^{*}, and Amit K. Roy-Chowdhury, *Modeling and Recognition of Complex Human Activities*, Visual Analysis of Humans, T.B. Moeslund and L. Sigal and V. Krüger and A. Hilton (eds.), Springer-Verlag, 2011.
- [SB2] Bi Song, **Ricky J. Sethi**, and Amit K. Roy-Chowdhury, *Wide area tracking in single and multiple views*, Visual Analysis of Humans, T.B. Moeslund and L. Sigal and V. Krüger and A. Hilton (eds.), Springer-Verlag, 2011.
- [SB1] **Ricky J. Sethi**, Amit K. Roy-Chowdhury, and Ashok Veeraraghavan, *Gait Recognition Using Motion Physics in a Neuromorphic Computing Framework*, Multibiometrics for Human Identification, B. Bhanu and V. Govindaraju (eds.), Cambridge University Press, 2010.

Refereed Conferences and Workshops

- [SC13] **Ricky J. Sethi**, *Towards Defining Groups and Crowds in Video Using the Atomic Group Actions Dataset*, IEEE International Conference on Image Processing (ICIP), 2015. (Oral)
- [SC12] **Ricky J. Sethi**, *A Perceptually-Inspired Stochastic Framework for Video Search and Analysis*, Perception Inspired Video Processing (PIVP), ACM International Conference on Multimedia (ACM MM), 2014. (Oral)
- [SC11] **Ricky J. Sethi**, Yolanda Gil, Hyunjoon Jo, and Andrew Philpot, *Large-Scale Multimedia Content Analysis Using Scientific Workflows*, ACM International Conference on Multimedia (ACM MM), 2013. (Oral)
- [SC10] Yolanda Gil, Angela Knight, Kevin Zhang, Larry Zhang, and **Ricky J. Sethi**, *An Initial Analysis of Semantic Wikis*, ACM International Conference on Intelligent User Interfaces (IUI), 2013.
- [SC9] **Ricky J. Sethi**, Hyunjoon Jo, and Amit K. Roy-Chowdhury, *A Generalized Data-Driven Hamiltonian Monte Carlo for Hierarchical Activity Search*, IEEE International Conference on Image Processing (ICIP), 2013.
- [SC8] **Ricky J. Sethi** and Lynn Bry, *The Madsci Network: Direct Communication of Science from Scientist to Layperson*, 21st International Conference on Computers in Education (ICCE), 2013.
- [SC7] **Ricky J. Sethi**, Hyunjoon Jo, and Yolanda Gil, *Re-Using Workflow Fragments Across Multiple Data Domains*, Proceedings of the Seventh Workshop on Workflows in Support of Large-Scale Science (WORKS), ACM/IEEE Supercomputing Conference (SC), 2012. (Oral)
- [SC6] **Ricky J. Sethi** and Amit K. Roy-Chowdhury, *A Physics-based Stochastic Framework for Activity Recognition and Analysis*, 51st Conference of the Society of Instrument and Control Engineers (SICE), 2011. (Oral)
- [SC5] Matheus Hauder, Yolanda Gil, **Ricky J. Sethi**, Yan Liu, and Hyunjoon Jo, *Making Data Analysis Expertise Broadly Accessible through Workflows*, Proceedings of the Sixth Workshop on Workflows in Support of Large-Scale Science (WORKS), ACM/IEEE Supercomputing Conference (SC), 2011. (Oral)
- [SC4] **Ricky J. Sethi** and Amit K. Roy-Chowdhury, *Modeling and Recognition of Complex Multi-Person Interactions in Video*, ACM Workshop on Multimodal Pervasive Video Analysis (ACM MPVA), ACM Multimedia (ACM MM), 2010. (Oral)

- [SC3] Ricky J. Sethi and Amit K. Roy-Chowdhury, *The Human Action Image*, International Conference on Pattern Recognition (ICPR), 2010.
- [SC2] Ricky J. Sethi and Amit K. Roy-Chowdhury, *A Neurobiologically Motivated Stochastic Method for Analysis of Human Activities in Video*, International Conference on Pattern Recognition (ICPR), 2010.
- [SC1] Ricky J. Sethi, Amit K. Roy-Chowdhury, and Saad Ali, *Activity Recognition by Integrating the Physics of Motion with a Neuromorphic Model of Perception*, IEEE Workshop on Motion and Video Computing (WMVC)/IEEE Workshop on Applications of Computer Vision (WACV), 2009.

PRESENTATIONS

- [P12] Invited Speaker, Amazon/Kiva, Westborough, MA, 2015.
- [P11] Invited Speaker, *Scientific Workflows for Group Analysis in Video*, Fitchburg State University, Fitchburg, MA, 2014.
- [P10] Invited Speaker, *Social Collaboration in Virtual Communities*, University of Massachusetts Medical Center, Worcester, MA, 2013.
- [P9] *Structured Analysis of the ISI Atomic Pair Actions Dataset using Workflows*, SCCV 2012, University of California, Irvine, Irvine, CA, 2012.
- [P8] Invited Speaker, *Social Collaboration in Virtual Communities*, University of Southern California - Information Sciences Institute, Marina del Rey, CA, 2011.
- [P7] Invited Speaker, *The Madsci Network: An Ask-A-Scientist Website*, Entrepreneurship and University Research Day, IE Tech Week 2010, San Bernardino, CA, 2010.
- [P6] *Human Action Image*, SCCV 2010, University of California, Irvine, Irvine, CA, 2010.
- [P5] Invited Speaker, *The Data Driven Hamiltonian Monte Carlo*, USC Quantum Information and Condensed Matter Physics, University of Southern California, Los Angeles, CA, 2009.
- [P4] *Activity Recognition using a Data Driven Hamiltonian Monte Carlo*, SCCV 2009, University of California, Irvine, Irvine, CA, 2009.
- [P3] Invited Speaker for Java workshop for the IEEE, DeVry University, West Hills, CA, 2003.
- [P2] Invited Speaker for multiple colloquiums on Computer-based Physics Labs, DeVry University, Pomona, CA, 2002-2003.
- [P1] Invited Speaker for University Day, DeVry University, Pomona, CA, 2002.

PROFESSIONAL REGISTRATIONS, SERVICE, AND REVIEWERSHIPS

NSF Panel Service

- Panelist, NSF Cyberlearning DIP Review Panel, 2013
- Panelist, NSF Cyberlearning DIP Review Panel, 2012
- Panelist, NSF Cyberlearning CAP Review Panel, 2012

Organizing Committee Service

- Co-Chair, Scientific Workflows for Machine Learning Applications (SWMLA) in conjunction with International Conference on Machine Learning (ICML), 2013
- Local Organizing Chair and Registration Chair, International Conference on Intelligent User Interfaces (IUI), 2013
- Demos Chair, International Conference on Collaboration Technologies and Systems (CTS), 2013 - 2014

Editorial Board and Committee Service

- Center for Teaching and Learning, Fitchburg State University, 2014 - Present
- Editorial Board Member, International Journal of Computer Vision & Signal Processing, 2011 - Present
- Associate Editor-in-Chief for the Journal of Postdoctoral Research, 2012 - Present
- Curriculum Review Committee for DeVry University, 2013
- Technical Book Reviewer, Packt, "Practical Data Analysis", 2013
- Program Committee Member, International Conference on Informatics, Electronics & Vision (ICIEV), 2012-2013
- Program Committee Member, International Conference on Connected Vehicles (ICCV), 2012-2013

Reviewerships

- Reviewer for ASEE, CHI, CSCJ, CVIU, ICCVE, ICIP, IJCVSP, IJME, IJMS, IUI, IVCJ, MVAP, SICE, SMC, and TSMC
- CAA Alumni Scholarship Committee for University of California, Berkeley
- Scholarship Selection Committee for University of California, Riverside

Registrations and Memberships

- ISI Representative for the USC Postdoctoral Association
- Member, YSP/Madsci Financial Board
- Member, American Institute of Physics
- Member, IEEE
- Fellow, North American Academy of Arts and Sciences

STUDENT
ADVISING AND
COURSE
DEVELOPMENT

- Co-Supervised multiple students at UMass Amherst/UMass Medical School, 2014
 - Jesse Lingeman, PhD Student at UMass Amherst
 - Balaji Polepali Ramesh, PhD Student (currently at Nuance Communications)
 - Qing Zhang, PhD Student (currently at eBay)
- Supervised Lorenzo Rossi, Postdoc Intern at The Madsen Network, *Social Computing and Learning*, 2012-2014
- Supervised Hyunjoon Jo, USC Graduate Student, *Physics-Based Computer Vision Methods*, 2011-2013
 - Currently at Alcatel-Lucent
- Supervised Angela Knight, Kevin Zhang, and Larry Zhang, Harvard-Westlake Summer Interns, *The Democratization of Semantic Properties: An Analysis of Semantic Wikis*, 2012
- Supervised Kabir Chug, Stonehill International School Bangalore Summer Intern, *Atomic Group Actions*, 2012
- Supervised Xinlei Chen, UCLA CSST Summer Intern from Zhejiang University, *Topic Modeling Approaches for The Madsen Network and Short Document Problem*, 2011
 - Presently at Carnegie-Mellon University
- Advised students on senior projects and undergraduate theses; selected students/projects:
 - Hyunjoon Jo, *Fire Fighting Assistant System with an Intelligent Robot* (won 1st place), 2008
 - Paul Mann, *Linear, Automated Balance Walker*, 2007
 - Christopher Clark, *Automated Ordering via an Electronic Glove Interface*, 2006
- Responsible for full course development, including lectures, labs, and discussions, both on-site and online via eCollege, Blackboard, WebCT, moodle, and Dokuwiki/PHP templates
 - Developed complete course content and websites for various classes; sample courses available at <http://www.sethi.org/classes/>

TEACHING
EXPERIENCE

Sample student evaluations available upon request. Courses experience:

Fitchburg State University

- CSC 1500/1550, Computer Science
- CSC 2400, Database Systems
- CSC 3450, LAN
- CSC 3005, Topic: Introduction to Data Science

Southern New Hampshire University

- IT 511, Object Oriented Application Development
- IT 620, Object Oriented Systems Design
- IT 660, Artificial Intelligence

University of Southern California

- PHYS 135, Physics for Life Sciences
- PHYS 151, Physics for Scientists & Engineers