

## **CURRICULUM VITAE**

Michael D. Scott

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### ***Work address***

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### **Research interests:**

Computer science education, introductory computer programming, and computer science at the high school level.

### **Education:**

- **M.S. in Computer Science**, Rensselaer Polytechnic Institute, May 1998.
- **B.S. in Industrial Engineering**, *with distinction*, Stanford University, June 1990.

### **Individual Honors:**

- College of Natural Sciences 2007 – 2008 Sustained Outreach Award, April 2009.
- Promoted to Senior Lecturer, September 2007.
- College of Natural Sciences 2005 – 2006 Sustained Outreach Award, March 2006.
- College of Natural Sciences 2004 – 2005 Advisory Council Teaching Excellence Award, April 2005.
- Natural Sciences Council 2005 Faculty Service Award, April 2005.
- Navy Commendation Medal, October 1997.
- Navy Achievement Medals, March 1993, October 1994, October 1995.
- Phi Beta Kappa, academic honor society, June 1990.
- Tau Beta Pi, engineering honor society, May 1989.

### **Group Honors:**

- College of Natural Sciences 2005 – 2006 Innovative Outreach Award, March 2006. Awarded to the First Bytes Outreach Program.
- Women in Natural Sciences 2004 – 2005 Everybody WINS awards, October 2005. Awarded to the First Bytes Program Outreach.

### **Employment:**

- Lecturer, Department of Computer Sciences, University of Texas at Austin. (9/2000 – present)
- Research Scientist, Department of Computer Sciences, University of Texas at Austin. (1/2005 – 5/2005)
- Co-director, Texas University Interscholastic League (UIL) Academic Competition for High Schools, Computer Science Contest, (5/2002 – 9/2009), Materials contributor. (9/2009 - present)
- Consultant, Advanced Placement Computer Science workshops sponsored by the College Board. (4/2002 – present)
- Consultant, Advanced Placement Strategies. ( 4/2003 – 4/2006 )
- Consultant, Advanced Placement Computer Science exam grading conducted by Educational Testing Services. (6/2001 – 6/2004)
- Computer Science Classroom Teacher, Round Rock High School. (9/1998 – 6/2000)
- Software Support, Motorola, BAT-1, Austin TX. (6/1998 – 9/1998)
- Instructor, Submarine Communications and Operations Division, US Navy Submarine School, Groton, CT. (11/1995 – 6/1998)

- Submarine Officer, Chemistry and Radiological Controls Officer, Training Officer, Sonar Officer, USS Alaska, SSBN 732, Bangor, WA. (8/1993 – 10/1995)
- Instructor, Engineering Watch Officer Training, US Navy, Knolls Atomic Power Laboratory – Kesselring, West Milton, New York, MARF Prototype. (3/1992 – 3/1993)
- Student, Navy Nuclear Power Program, various locations. (7/1990 – 2/1992, 4/1993 – 7/1993)
- Undergraduate Teaching Assistant, Computer Science Department, Stanford University. (1/1988 – 2/1990)

### Teaching:

Course Number of sections in parenthesis	Term	Enrollment	Ratings (out of 5.0)	
			Instructor	Course
CS307: Foundations of Computer Science	Summer 2009	35	4.9	4.6
CS307: Foundations of Computer Science (2)	Spring 2009	154	4.6	4.4
CS320N: Visual programming	Spring 2009	29	4.1	3.7
CS305J: Introduction to Computing	Fall 2008	128	4.7	4.5
CS307: Foundations of Computer Science (2)	Fall 2008	144	4.7	4.4
CS307: Foundations of Computer Science	Summer 2008	36	4.7	4.4
CS307: Foundations of Computer Science (2)	Spring 2008	132	4.7	4.4
CS320N: Visual programming	Spring 2008	26	4.5	3.9
CS305J: Introduction to Computing	Fall 2007	103	4.5	4.3
CS307: Foundations of Computer Science (2)	Fall 2007	126	4.6	4.3
CS307: Foundations of Computer Science	Summer 2007	28	4.4	4.2
CS307: Foundations of Computer Science (2)	Spring 2007	116	4.7	4.4
CS320N: Visual programming	Spring 2007	20	4.7	4.3
CS305J: Introduction to Computing	Fall 2006	94	4.5	4.2
CS 307: Foundations of Computer Science (2)	Fall 2006	125	4.5	4.3
CS 307: Foundations of Computer Science	Summer 2006	22	4.6	4.4
CS 307: Foundations of Computer Science (2)	Spring 2006	98	4.6	4.2
CS329E: Elements of Visual Programming	Spring 2006	20	4.6	4.1
CS 307: Foundations of Computer Science (2)	Fall 2005	94	4.7	4.2
CS329E: Elements of Visual Programming	Fall 2005	39	4.5	3.9
CS 307: Foundations of Computer Science	Summer 2005	29	4.8	4.4
CS 307: Foundations of Computer Science (2)	Spring 2005	98	4.7	4.4
CS 307: Foundations of Computer Science	Fall 2004	126	4.4	4.0
CS 305J: Introduction to Computing	Fall 2004	96	4.4	4.0
CS 307: Foundations of Computer Science	Summer 2004	19	4.4	4.2
CS 307: Foundations of Computer Science (3)	Spring 2004	112	4.5	4.2
CS 307: Foundations of Computer Science (3)	Fall 2003	136	4.5	4.1
CS 305J: Introduction to Computing	Fall 2003	105	3.9	3.7
CS 307: Foundations of Computer Science	Summer 2003	27	4.4	4.3
CS 307: Foundations of Computer Science (3)	Spring 2003	186	4.2	3.9
CS 307: Foundations of Computer Science (2)	Fall 2002	251	4.2	3.9
CS 307: Foundations of Computer Science (University Extension)	Fall 2002	10	4.3	3.9
CS 307: Foundations of Computer Science	Summer 2002	42	4.0	3.9
CS 307: Foundations of Computer Science (3)	Spring 2002	215	4.5	4.0
CS 307: Foundations of Computer Science (2)	Fall 2001	272	4.5	4.0
CS 307: Foundations of Computer Science (University Extension)	Fall 2001	18	4.6	3.9
CS 303E: Elements of Computers and Programming (4)	Spring 2001	473	4.4	4.0
CS 303E: Elements of Computers and Programming (3)	Fall 2000	435	4.3	4.0
CS 303E: Elements of Computers and Programming (University Extension)	Fall 2000	31	4.2	3.9

## **Curriculum Development**

- CS324e, Elements of Graphics and Visualization. volunteered to reconstitute course on use of graphics for Elements of Computing program. Class designed for students not major in Computer Science.
- Developed new course, CS329e (now numbered CS320N), Elements of Visual Programming, Summer 2005. Course for non majors to learn programming using visual programming environments such as Alice and LabVIEW instead of text based programming languages.
- Developed teaching materials for high school Advanced Placement computer science courses, Spring 2005. Set of materials for use by high school teachers to assist in teaching a second course in computer programming.
- Developed new introductory programming course, CS305J, for Computer Science majors. Previously majors and non majors took the same programming courses CS303e. Developed a more rigorous course for students wishing to major in computer science.
- Co-creator of the Undergraduate Section Leader Program. Coordinator for undergraduate teaching assistants in introductory Computer Science classes. Fall 2001 – Spring 2004. Program to use undergraduates as teaching assistants to lower the student to TA ratio.
- Developed Java version of CS 307, Foundations of Computer Science, Summer 2001. Department moved to use the same programming language in the three course introductory sequence. Complete reworking of second course in the sequence.
- Developed lab materials and lectures for First Bytes summer camp, an outreach program to high school girls to raise interest in Computer Science. Curriculum has progressed from MatLab to LabVIEW to Alice. 2003 – 2005.

## **National Service**

- Reviewer, Advanced Placement Computer Science Exam, March 2009.
- Participant, College Board University Faculty Colloquium on the Advanced Placement Computer Science Course, Chicago, IL, October 24 - 26, 2008.
- ACM Special Interest Group for Computer Science Education, (SIGCSE), reviewer for Birds of a Feather Sessions for the 2008 ACM-SIGCSE Symposium, Fall 2007.
- Consultant, Advanced Placement Computer Science exam grading conducted by Educational Testing Services, Summer 2001, 2003, 2004.
- Participant, College Board Advanced Placement Computer Science AB Exam (CS2) Pretest Study, Fall 2002, Spring 2005, Fall 2005, Spring 2006, Fall 2006, Fall 2007. A Exam (CS1) Pretest Study, Fall 2004, Fall 2005, Fall 2006, Fall 2007.
- Participant, College Board Advanced Placement Computer Science A and AB Exams College Comparability Study, Multiple Choice and Free Response Questions, Fall 2003.
- Contributor, College Board AP Computer Science Exam, Fall 2005, January 2006, June 2006, April 2008.
- Contributor, Computer Science GRE Subject Exam, Spring 2005, Fall 2005, Spring 2006, Fall 2007.
- Reviewer for NSF proposal, Division of Elementary, Secondary, and Informal Education. November, 2004.

## **Secondary Education Liaison Activities**

### **Workshops**

- (1) "Advanced Placement Computer Science", College Board 2 day workshop, Norman, OK, January 18-19, 2008.
- (2) "Advanced Placement Computer Science", College Board 2 day workshop, Cypress Woods High School, Houston, TX, November 9-10, 2007.
- (3) "Advanced Placement Computer Science", College Board 2 day workshop, Cypress Woods High School, Houston, TX, November 10-11, 2006.

- (4) "The Advanced Placement Computer Science Exam: Object Oriented Program, Data Structures, and Algorithms," Pflugerville ISD student preparation and tutoring (12 hours of instruction), Pflugerville, TX, 2005 – 2006 school year.
- (5) "Creating an Advanced Placement Computer Science Program", College Board 1 Day Advanced Placement Computer Science Workshop, Westlake High School, Austin, TX, April 8, 2006.
- (6) Various lectures on Object Oriented Programming, Data Structures, Recursion, and Algorithm Analysis, College Board 2 Day Advanced Placement Computer Science workshop, St. Mary's Hall, San Antonio, TX, February 10-11, 2006.
- (7) "The Advanced Placement Computer Science Exam: Object Oriented Program, Data Structures, and Algorithms," Pflugerville ISD student preparation and tutoring (16 hours of instruction), Pflugerville, TX, 2004 – 2005 school year.
- (8) "Java in the Advanced Placement Computer Science A course," Pasadena ISD Computer Science teachers 1 day workshop, Pasadena High School, Houston, TX, August 12, 2004.
- (9) "Data Structures and Object Oriented Programming in Java," Fort Bend ISD Computer Science teachers 1 day workshop, Elkins High School, Houston, TX, August 5, 2004.
- (10) "The Advanced Placement Computer Science Exam: Object Oriented Program, Data Structures, and Algorithms," Pflugerville ISD student preparation and tutoring (12 hours of instruction), Pflugerville, TX, 2003 – 2004 school year.
- (11) Various lectures on topics such as Teaching Objected Oriented Programming, Data Structures, and Nifty Assignments, College Board 2 Day Advanced Placement Computer Science workshop, Norman, OK, January 23 – 24, 2004.
- (12) Various lectures on topics such as moving from C++ to Java, Object Oriented Programming, Creating an Advanced Placement Computer Science Program, and Tools for Teaching Programming and Java, College Board 1 Day Advanced Placement Computer Science workshop, Pope John XXIII High School, Sparta, NJ, October 11, 2003.
- (13) "The Advanced Placement Computer Science Exam: Object Oriented Program, Data Structures, and Algorithms," Pflugerville ISD student preparation and tutoring (8 hours of instruction), Pflugerville, TX, April 2003.
- (14) "Using Java in the Advanced Placement Computer Science A course," College Board 1 Day Advanced Placement Computer Science Workshop, Akins High School, Austin, TX, April, 2003.
- (15) "Using Java in Advanced Placement Computer Science," 1 Day Workshop, Texas Computer Education Association Annual Convention, Austin Texas, February 2003.
- (16) "Intermediate Java Programming for Advanced Placement Computer Science Teachers," Arlington ISD Computer Science teachers 4 day workshop, Arlington High School, Arlington, TX, June 24 – 27, 2002.
- (17) "An Introduction to Teaching Introductory Programming and Computer Science with Java," Round Rock ISD Computer Science Teachers 3 Day workshop, Round Rock High School, Round Rock, TX, May 29 – 31, 2001.

#### **Other Secondary Education Liaison Activities**

- *How to Increase Enrollment in High School Computer Science Classes*, Session at the ACM, Special Interest Group for Computer Science Education, The 40th ACM Technical Symposium on Computer Science Education, March 4 - 7, 2009.
- Chairman, Additions and Changes to the Texas University Interscholastic League (UIL) Academic Competition for High Schools, Computer Science Contest Advisory Committee, August 17, 2007.
- Co-director, Texas University Interscholastic League (UIL) Academic Competition for High Schools, Computer Science Contest. 2002 to present.
- Computer Science Teacher Training, Pflugerville High School, August 28, 2006.
- Panelist, Additions and Changes to the Texas University Interscholastic League (UIL) Academic Competition for High Schools, Computer Science Contest Advisory Committee, August 2009 and June 2005.
- Member, Georgetown High School Computer Science Advisory Committee, December 2004, March 2008.
- Member, Computer Science 8-12 Standard Setting for the Texas Examinations of Educator Standards (TExES) Program, October 25, 2004.

- Panelist, The Transition from C++ to Java for the Texas University Interscholastic League (UIL) Academic Competition for High Schools, Computer Science Contest Advisory Committee, August 17 – 18, 2002.

## **Publications:**

### **Unrefereed workshop papers**

- (1) "The Limitations of Current Object Oriented Dynamic Modeling Technique", *Proceedings of the 14<sup>th</sup> Annual Rensselaer at Hartford Computer Science Conference*, April 25<sup>th</sup>, 1998

### **Book Reviews**

- (1) *Java: An Introduction*, by Ralph Bravaco and Shai Simonson, McGraw-Hill. June 2006.
- (2) *Building Java Programs*, by Stuart Reges and Marty Stepp, Addison-Wesley. Fall 2005.
- (3) *An Active Learning Approach to Data Structures using Java*, by Timothy Budd, to be published by Addison-Wesley. Summer 2005.
- (4) *Data Structures and the Java Collections Framework*, William J. Collins. McGraw Hill, 2005.
- (5) *Objects, Abstraction, Data Structures, and Design Using Java*, Elliot B. Koffman and Paul A. T. Wolfgang. John Wiley & Sons, Inc. 2005.
- (6) *Java Program Design*, James P. Cohoon and Jack W. Davidson. McGraw Hill, 2004.
- (7) *Python Programming: An Introduction to Computer Science*, John Zelle, Franklin, Beedle, & Associates, 2004.

### **Other**

- (1) Sample course syllabus and teaching materials, *AP Computer Science Java Syllabi Collection*, The College Board, 2005.

## **Other Professional Activities:**

- Panelist, McGraw Hill Focus Group on Data Structures Textbooks, Boston, MA, June 2003.

### **Invited Lectures**

- (1) "Riding the Roller Coaster. Reflections on Ten Years of Computer Science Education.", Texas Computer Education Association Annual Convention, High School CS Teachers SIG, Austin Texas, February 6, 2008.
- (2) "How to Run a Hands on Programming Contest" and "Data Structures and Algorithms", UIL Student Activities Conference, University of Texas, Austin, TX, October 13, 2007 and October 4, 2008.
- (3) "AP Computer Science Update", Texas Computer Education Association Annual Convention, Austin Texas, February 8, 2007.
- (4) "The UIL Computer Science Contest" and "Computational Thinking," UIL Student Activities Conference, West Texas A & M University, Canyon, TX, September 16, 2006, Tyler Community College, Tyler, TX, September 23, 2006, University of Texas, Austin, TX, October 21, 2006, Texas A & M University Corpus Christi, Corpus Christi, TX, November 4, 2006.
- (5) "Creating and Using Sets and Maps in Java", invited technical lecture at the Texas Lutheran University Advanced Placement Computer Science Summer Workshop, July 27, 2006.
- (6) "Computer Science and UIL: Specifics about the contest and an overview of the field of Computer Science," The UIL Capital Conference, July 2006 and July 11, 2008.
- (7) "The University of Texas at Austin Computer Science Department Road Show," Texas Computer Education Association Annual Convention, Austin Texas, February 8, 2006.

- (8) "New topics in the UIL Computer Science Contest," UIL Student Activities Conference, Texas Tech University, Lubbock, TX, September 10, 2005, University of North Texas, Denton, TX, September 17, 2005, and University of Texas, Austin, TX, October 1, 2005.
- (9) "Java and the UIL Computer Science Contest," UIL Student Activities Conference, Texas Tech University, Lubbock, TX, September 27, 2003 and University of Texas, Austin, TX, October 25, 2003.
- (10) "The Transition from C++ to Java in Advanced Placement Computer Science," Texas Computer Education Association Annual Convention, Austin Texas, February 2003.
- (11) "From C++ to Java" and "Object Oriented Programming: Fundamentals and Teaching the Concepts", College Board 2 Day Advanced Placement Computer Science workshop, Plano High School, Plano, TX, October, 2002.
- (12) "Computer Science at the College Level," Round Rock High School, Round Rock, TX, March 2002.

## Student Supervision

### Undergraduate Independent Studies

- CS370, Undergraduate Conference Course, 2 students. Topics in computer science education and development of teaching materials for high school computer science classes. Spring 2005.
- TC660H, Plan II Honors Program Thesis, "The Tao of the Dow, An Automated Quantitative Analysis of Investment Psychology," Cameron Aderhold, December 5, 2003.

## Departmental / University Service

### Computer Science Department

- Game Making with Alice. Half day workshop at the Austin Area Girl Scouts *Groovy Games* camp. August 13, 2009.
- "CS Unplugged", presentation at the departmental Breakfast Bytes outreach program to middle and high school students, April 18, 2009.
- "Programming with Alice", presentation at the departmental Breakfast Bytes outreach program to middle and high school students, September 25, 2008.
- First Bytes / CS4HS camp for High School Computer Science Teachers. Host, presenter, and coordinator. 2.5 day workshop. July 2008, Jul 2009.
- Undergraduate Studies Committee, 2007 - 2009.
- First Bytes camp for High School Computer Science Teachers. Departmental participant and presentation on *CS Unplugged* materials. June 8 - June 10, 2007.
- Tour guide for St. Michaels Academy Tech Club visit to the department, February 22, 2007.
- Chairman's ad hoc Committee for Work Load Credit Policy, Fall 2006.
- Departmental representative at the Carnegie Mellon University Computer Science for High School Teachers conference, July 22 - 24, 2006.
- First Bytes camp for High School Computer Science Teachers. Departmental participant and presenter for lectures on using the *Alice Programming Language* and *Making Interesting Computer Science Programming Assignments*. July 11 – July 14, 2006.
- Provided testimony to the Texas State Board of Education on counting high school Computer Science classes as a Science or Mathematics credit. July 6, 2006, September 14, 2006, and July 18, 2007.
- Faculty Evaluation Committee, 2004 – 2005.
- Undergraduate Admissions Committee, 2002 – 2005.
- Turing Scholars Undergraduate Honors Programs Committee, 2001 – 2009.
- Chairman's ad hoc Committee for Women and Minorities in Computer Science, 2003 – 2004.
- First Bytes High School Girls Summer Camp Committee, 2002 – 2007.
- Faculty Liaison to the student chapter of the Association for Computing Machinery, 2001 – 2002.

## **Undergraduate**

- "Learning to Program with Alice and LabVIEW," 10 hours of lab instruction to First Bytes Summer Camp, June 2009, July 2009, June 2007, and July 2006
- "Learning to Program with LabVIEW and Alice," 12 hours of lab instruction to First Bytes Summer Camp, July 25 – July 29, 2005.
- "Learning to Program with LabVIEW," 12 hours of lab instruction to First Bytes Summer Camp, July 26 – July 30, 2004.
- "Succeeding in Computer Science as an Undergraduate," College of Natural Science Freshmen Interest Group, July 26, 2004.
- "Succeeding in Computer Science as an Undergraduate," College of Natural Science Freshmen Interest Group, November 11, 2003.
- "Learning to Program with MatLab," 20 hours of lab instruction to First Bytes Summer Camp, June 2003.
- "Succeeding in Computer Science as an Undergraduate," College of Natural Science Freshmen Interest Group, October 2002.
- "Being a Teacher / Being a Student: Differences in High School and College," College of Natural Sciences Dean's Scholars Lunch, October 2000.

## **University**

- "Encoding and Compression", one hour presentation at the Junior's Honors Colloquium. July 25, 2008, and July 23, 2009.
- "Colors and Computers", one hour presentation to Priscilla Pond Flawn Child and Family Laboratory School, June 11, 2008 and June 22, 2009.
- "Computer Programming with Alice", on going presentation at Explore UT, March 1, 2008.
- University Admissions and Registration Committee, 2007 - 2009.
- Texas Interdisciplinary Plan (TIP), application reviews, April 2006, 2007, 2008, 2009.
- Dean of the College of Natural Science, ad hoc committee on Computer Science in K – 12 Education, 2002 – 2003.
- "Learn to Program a Computer by Taking Over the World", on going presentation at Explore UT, March 2002, 2004.
- Contest Judge, UIL Computer Science State Contest, 2001 – 2009.
- Moove-In Volunteer, August 2001.