

# DAN OVERHOLT

dano@create.ucsb.edu  
1752 East Eighth Street  
Chico, CA. 95928  
(530) 343-4368

## Curriculum Vitae

BORN Chico, California, USA. March 2<sup>nd</sup>, 1974

SHORT BIO Dan Overholt is currently a postdoctoral fellow in the Media Arts and Technology (MAT) program and Lecturer / Researcher at the Center for Research in Electronic Art Technology (CREATE) at UC Santa Barbara. His dissertation, titled *Musical Interface Technology: Multimodal Control of Multidimensional Parameter Spaces for Electroacoustic Music Performance*, is the result of his long-term focus on the development of advanced technologies for live performance systems. He composes, improvises, and performs internationally with interactive human-computer interfaces and custom audio synthesis and processing algorithms, and his solo and collaborative works have been shown at major venues such as Ars Electronica, the Dutch Electronic Art Festival (DEAF), the Inter-Society for the Electronic Arts (ISEA), and New Interfaces for Musical Expression (NIME). He was awarded a Fulbright scholarship to the Studio for Electro-Instrumental Music (STEIM) in Amsterdam from 2003-04, and a National Science Foundation fellowship for research in Interactive Digital Multimedia at UC Santa Barbara from 2005-07.

## Education

- 2007 **Ph.D., Media Arts and Technology**  
University of California, Santa Barbara, CA
- 2000 **Master of Science, Media Arts and Sciences**  
Massachusetts Institute of Technology, Cambridge, MA
- 1997 **Bachelor of Science, Computer Engineering (emphasis DSP)**  
**Bachelor of Arts, Music (Violin Performance / Electronic Music)**  
California State University, Chico, CA – Minor in Mathematics

## Research and Teaching Experience

- 2005-2007 **NSF IGERT Researcher in Interactive Digital Multimedia, UCSB**  
National Science Foundation Integrative Graduate Education and Research Traineeship program for research in Interactive Digital Multimedia. Developed multimodal human-computer interfaces combining electronic sensors, audio analysis, and computer vision algorithms for musical performance and virtual reality applications. Led the development of a distributed wireless sensor network for interface devices in the Allosphere, a three-story tall fully immersive environment in which visitors can navigate interactive stereoscopic and pluriphonic 3D virtual worlds and control ambisonic soundfields. Collaboratively developed interactive experience in the Allosphere.

- 2005-2007 **Lecturer, Media Arts and Technology, UC Santa Barbara**  
Proposed, organized and taught a series of courses (MAT594O) designed to explore the use of new sensor technologies for interactive art, music, and performance systems, as well as haptics/robotics, installations, and responsive environments. Taught on a yearly basis as interdisciplinary offerings between the MAT, Music, and Art departments. Developed course curriculum from the ground up, including reading materials, student assignments, and electronics prototyping platform, the CREATE USB Interface (CUI).
- 2006 **Instructor, Beyond Hacking workshop, STEIM**  
Organized workshop at the Studio for Electro-Instrumental Music in Amsterdam with Daniel Schorno. Participants built their own electronic musical instruments with the CREATE USB Interface.
- 2006 **Instructor, Exploring New Media Interfaces workshop, Montreal**  
Workshop at Concordia University / McGill, arranged through Videographe, open to artists interested in the possibilities of electronics and sensors in an interactive context – installation artists, musicians, performers, dancers, teachers, engineers, and experimenters. Included both theory and project components.
- 2005-2006 **CREATE Technical Coordinator, UC Santa Barbara**  
Managed and maintained the electronic music studios and classrooms of the Center for Research in Electronic Art Technology (CREATE). Upgraded studio equipment, assisted in the organization, production, and promotion of CREATE concerts.
- 2003-2004 **Visiting Researcher, STEIM**  
Funded by the Institute for International Education Fulbright Fellowship program – promoting musical performance through new interface technologies at the Studio for Electro-Instrumental Music in Amsterdam, The Netherlands. Researched musical performance in electronic music, developed new interfaces and performance techniques, designed the STEIM USB Controller, a wireless controller, and custom instruments such as the Sonic Scanner and the Overtone Violin. Compositions and improvisatory performances with new musical instruments, both solo and in various ensembles.
- 2001-2003 **Interdisciplinary PhD Researcher, UCSB**  
Approved through the Graduate Division at UC Santa Barbara, research focused on the control of multidimensional parameter-spaces through new musical interface technologies. Researched graphical control of real-time audio synthesis and alternative live performance interfaces, developed the Graphonic Interface and the Overtone Keyboard. Studied tangible interaction design in music matched to human perception – interfaces and mappings developed with attention to physical affordances, ergonomics, gestural proprioception, human cognitive and psychological intuition, and musical capabilities at micro, meso, and macro levels.

- 1998-2001 **Graduate Student Researcher, MIT Media Lab**  
 Completed research in real-time computer music systems for the generation, control, and interaction with electronic music in the Hyperinstruments group at the Massachusetts Institute of Technology Media Laboratory in Cambridge, Massachusetts. Created the Multipurpose Array of Tactile Rods for Interactive eXpression (MATRIX), an array of spring-loaded rods for the control of real-time musical synthesis and visualization algorithms. Contributed to many collaborative projects within the Tangible Media, Responsive Environments, and Interactive Cinema groups.
- 1990-1997 **Instructor, Music Department, CSU Chico**  
 Taught performance classes in the department of Music, C.S.U. Chico. Led jazz and popular music ensembles (MUS205Y, 1995), taught private lessons in violin performance and improvisation techniques. Also, violin instructor at many workshops in classical, chamber, jazz, and country music such as the Davis Fiddling Workshop and the Southern Oregon Fine Arts Institute.

#### Other Teaching, Residencies, Invited Lectures, and Presentations

- 2007 **Presentation, Southern California Computing in Music Symposium**  
 Talk on Musical Interaction Design with the CREATE USB Interface at the University of Southern California (17 February, 2007).
- 2006 **Lecture, Center for Intelligent Machines (CIM), McGill University**  
 Lecture and demonstration of New Electronic Musical Instruments in the Electronics and Computer Engineering department at McGill University, Montreal (4 December, 2006).
- 2006 **Artist Talk, Concordia University / Videographe**  
 Presentation and workshop on interface development for interactive performance systems and interactive installations, at Concordia University, Montreal, Canada (30 November, 2006).
- 2006 **Teaching Assistant, Media Arts and Technology, UCSB**  
 Assumed responsibility for leading a research and development team of students in Unmanned Aerial Vehicle (UAV) systems for Civil Counter Reconnaissance in Marko Peljhan's MAT594P course: The Art and Science of Aerospace Culture, Fall 2006.
- 2006 **Invited Lecture, CCRMA Colloquium Series**  
 Lecture and demonstration at Stanford University's Center for Computer Research in Music and Acoustics (CCRMA): New Instruments for Enhancing Expressivity in Computer Music Performance (15 November, 2006).
- 2006 **Presentation, UC DARNet Grad Res Info/Xchge**  
 Joint presentation with Graham Wakefield, Lance Putnam, and Hyunkyung Ji at UC Los Angeles: Towards the Allosphere: Intensive Art, Immersive Worlds (28 April, 2006).

- 2006 **Invited Panel, New Frontiers in Music: New Instruments**  
 Presentation and panel with Eric Singer, Laetitia Sonami, and Dan Trueman at the Philadelphia Music Project: Settlement Music School, The University of the Arts. (21 March, 2006).
- 2005 **Presentation, DORKBOTSOCAL7**  
 Invited presentation and demonstration at UC Santa Barbara: Re-inventing the Orchestra: HCI in Music Performance (4 March, 2005).
- 2004 **Residency, Danish Institute for Electronic Music (DIEM)**  
 One-month residency, composition and performance, prepared mapping software and developed synthesis algorithms towards performance with the Overtone Violin (August, 2004).
- 2002 **Presentation, G.U.I. Workshop, Gesturing the UPIC Instrument**  
 invited lecture: The MATRIX: A Gestural Controller for Real-time Musical Performance, UC Santa Cruz (17 August, 2002).
- 2000 **Presentation, CREATE Symposium on SOUND IN SPACE**  
 Presented and performed original composition, The FlyingViolin, a spatial work for solo electronic violin with individual string outputs, using Max/MSP and SPAT, developed at IRCAM (18-19 March, 2000).

#### Grants, Awards, and Fellowships

- 2004-2007 **National Science Foundation IGERT fellowship**  
 Recipient of an NSF grant, Integrative Graduate Education and Research Traineeship Program in Interactive Digital Multimedia at UC Santa Barbara.
- 2006-2007 **Interdisciplinary Humanities Center (IHC) Pre-Doctoral Fellowship**  
 Grant from the IHC at UC Santa Barbara, Dissertation Award.
- 2006-2007 **Visual, Performing, and Media Arts Award, UCSB**  
 Award from the Interdisciplinary Humanities Center at UC Santa Barbara. Two separate grants, one with Lisa Jevbratt and Anne-Marie Hansen (Art), and one with John Thompson (Music).
- 2003-2004 **Fulbright Fellowship** – One year grant to develop new music interface technologies at the Studio for Electro-Instrumental Music (STEIM) in Amsterdam, The Netherlands.
- 1998-2000 **MIT Research Fellowships** – Tuition fellowships, Massachusetts Institute of Technology Media Laboratory, Cambridge, MA.
- 1996 **TEC Awards Scholarship Grant**  
 The Mix Foundation for Excellence in Audio provided this award at the 12<sup>th</sup> annual Technical Excellence & Creativity Awards.
- 1996 **CCRMA Workshop Scholarship** – Tuition to summer workshop at Stanford University's Center for Computer Research in Music and Acoustics (CCRMA), Palo Alto, CA.

- 1995 **CNMAT Workshop Scholarship** – Tuition to one-month workshop at UC Berkeley's Center for New Music and Audio Technologies (CNMAT), Berkeley, CA.
- 1995-1996 **Jerry Nunes Memorial, Lotys Sandstrom Gibb Memorial Scholarships** CSU Chico Alumni scholarships in the Electronics and Computer Engineering Department, merit-based award.
- 1989-1995 **Chico Symphony Scholarships, Music Department, CSU Chico** Prize given via violin performance audition ('89, '91, '92, '93, '95).

#### Professional Industry Experience

- 2006-2007 **BIOPAC Systems, Inc:** Electronics and Firmware Design Engineer for bio-signal measurement systems, Zigbee wireless development of custom circuit boards and embedded firmware. Goleta, CA.
- 2001-2003 **Echo Digital Audio, Inc:** Electronics Engineer for professional audio interface development, PCI, PCMCIA, Firewire. Carpinteria, CA.
- 1997-1998 **E-Mu Systems, Inc:** Hardware Design Engineer for electronic music products. Developed prototype hardware at board level (PCB design) and chip level (FPGA/ASIC). Scotts Valley, CA
- 1996 **Eventide, Inc:** Hardware/Software Engineer. Designed DSP hardware and embedded-FFT firmware, developed real-time software in C++ and assembly language. Little Ferry, NJ.

#### Publications

- Thompson, J. and Overholt, D., "Sonofusion: Development of a Multimedia Composition for Overtone Violin", *Proceedings of the International Computer Music Conference (Copenhagen, Denmark, 27-31 August 2007)*.
- D. Overholt, B. Bell, J. Kleban, J. Kuchera-Morin, L. Putnam, and J. Thompson, The Multimodal Music Stand, *Proceedings of the New Interfaces for Musical Expression Conference (New York, New York, 6-10 June 2007)*.
- D. Overholt, Musical Interaction Design with the CREATE USB Interface: Teaching HCI with CUIs instead of GUIs, *Proceedings of the International Computer Music Conference (New Orleans, Louisiana, 6-11 November 2006)*.
- C. Poepel and D. Overholt, Recent Developments in Violin-Related Digital Musical Instruments: Where Are We and Where Are We Going?, *Proceedings of the New Interfaces for Musical Expression (NIME) Conference (Paris, France, 4-8 June 2006)*.
- D. Overholt, The Overtone Violin: a New Computer Music Instrument, *Proceedings of the International Computer Music Conference (Barcelona, Spain, 5-9 September 2005)*.

D. Overholt, The Overtone Violin, *Proceedings of the New Interfaces for Musical Expression (NIME) Conference (Vancouver, Canada, 26-28 May 2005)*.

D. Overholt, The Sonic Scanner and the Graphonic Interface, *Proceedings of the International Computer Music Conference (Miami, Florida, 1-6 November 2004)*.

D. Overholt, Visually Controlled Synthesis using the Sonic Scanner and the Graphonic Interface, *Proceedings of the 117th Audio Engineering Society Convention (San Francisco, California, 28-31 October 2004)*.

T. Jehan, D. Overholt, H. Garcia, C. Vaucelle, Real-time Distributed Media Applications in LANs with OSC, *Proceedings of the 1st Open Sound Control Conference (Berkeley, California, 30 July 2004)*.

W. Burleson, D. Overholt, P. Nemirovsky, Hydrogen Wishes, *Conference Abstracts and Applications of SIGGRAPH '03 (San Diego, California, USA, 27-31 July, 2003)*.

D. Overholt, C. Roads, J. Thompson, On Musical Gestures and New Performance Interfaces for Electronic Music, *Accepted to the 5th International Gesture Workshop (Genova, Italy, 15-17 April 2003)*.

D. Overholt, Control of Signal Processing Algorithms using the MATRIX Interface, *Proceedings of the 114th Audio Engineering Society Convention '03 (Amsterdam, The Netherlands, March 22-25, 2003)*.

D. Overholt, New Musical Mappings for the MATRIX Interface, *Proceedings of the International Computer Music Conference '02 (Goteborg, Sweden, September 16-21, 2002)*.

D. Overholt, The MATRIX: A New Musical Instrument for Interactive Performance, *Proceedings of the International Computer Music Conference '01 (Havana, Cuba, September 17-22, 2001)*.

D. Overholt, Multipurpose Array of Tactile Rods for Interactive expression, *Conference Abstracts and Applications of SIGGRAPH '01 (Los Angeles, California, USA, 12-17 August, 2001)*.

D. Overholt, The MATRIX: A Novel Controller for Musical Expression, *New Interfaces for Musical Expression Workshop at CHI '01 (Seattle, Washington, USA, April 1-2, 2001)*.

D. Overholt, P. Nemirovsky, InterElastique: An Interactive Performance System for Control of an Audio-Visual Experience Using Novel Stretchable Sensors, *Colloquium on Musical Informatics '00 (La'Aquila, Italy, September 2-5, 2000)*.

### Selected Performances/Exhibitions

- 2006-2007      *Allobrain Exhibition*, collaborative interactive installation in the Allosphere at the ACM Multimedia Conference UC Santa Barbara, (October 2006). Developed rapid prototyped wireless interfaces for control of virtual world and spatialization of ambisonic soundfield.
- 2006-2007      *Sonofusion: for Overtone Violin*, by John Thompson, performed at the Spark Festival of Electronic Music and Arts (23 February, 2007), the International Computer Music Conference (9 November, 2006), the Center for Research in Computing and the Arts (CRCA), UC San Diego (6 May 2006) and at the California Institute for the Arts, Valencia, CA (April 2006) as part of the California Computer Music Exchange Concert Series.
- 2005-2006      *CREATE Electroacoustic Ensemble* improvisation for KCSB 91.9FM - live performance on Overtone Violin, 23 August 2006, with Graham Wakefield and Lance Putnam. Primavera Concert (13 May 2005), Ensemble improvisations on KCSB 91.9FM (27 April 2005) and Radio Helsinki including performance on MATRIX Interface (17 April 2005). Generative installation at Welcome To The Future (3 June 2005).
- 2006              *Spectral Systems Exhibit, Civil Counter Reconnaissance* with Marko Peljhan at the Inter-Society for the Electronic Arts (ISEA), installation in San Jose State University Art Museum (7-13 August 2006).
- 2006              *Overtone Violin* Demonstration and Performance at the State of the Arts Conference, University of California Institute for Research in the Arts, UC Santa Barbara (May 2006).
- 2005              *dan'se suite for Overtone Violin* by Florian Hollerweger, performance at the Beyond Style Concert at the Center for Research in Electronic Art Technology (CREATE), UC Santa Barbara (14 May 2005).
- 2005              *Quiver*, a performance on the BoingBoing musical interface, with Lance Putnam and Wesley Smith at UC Santa Barbara (Fall, 2005).
- 2004-2005      *Duet for Violin + Violinist*, premiere of original composition for Overtone Violin at the Dutch Electronic Art Festival – DEAF04, Affective Turbulence, Rotterdam, Holland (9-21 November, 2004). Performance at the CREATE Concert, UC Santa Barbara (Winter, 2005), performance at the New Interfaces for Musical Expression Conference (NIME '05), Vancouver, Canada (26-28 May 2005).
- 2004              *Rapid Recovery Phase*, Performance with Joel Ryan, improvisation at the Studio for Electro-Instrumental Music, Amsterdam (16 June, 2004).
- 2003              *Sonic Scanner*, Live Performance with custom audiovisual interface, with Anne-Marie Hansen, visual artist, at the Kraakgeluiden, Overtoom 301, Amsterdam (Winter, 2003).

- 2002 *Dactylonomy*, premiere of original composition for MATRIX Interface and MIDI Piano with Stefanie Ku at the Woodstockhausen Electronic Music Festival, Santa Cruz Mountains (17 August, 2002).
- 2001 *MusicBottles* Installation at Ars Electronica, with Hiroshi Ishii and others, Beyond Graphical User Interfaces, Towards Tangible User Interfaces (Winter 2001).
- 1998 *MusicToys* Exhibit, new technologies for musical toys at the International Toy Fair in Tokyo, Japan, with Tod Machover (Fall 1998).
- 1996 *Irridescent Illusions*, original composition for video, electronic tape, violin, double-bass, tabla, and dance. With Dennis Ferguson (tabla), Mark Lavin (bass), and Cheryl Giscombe (dance), 12 April, 1996.

### Selected Service & Professional Activities, other Accomplishments

- 2005-2007 **CREATE USB Interface (CUI v1.0)**  
 Designed the CREATE USB Interface (CUI), a tool for both research and teaching as a reconfigurable open source hardware device that allows sensors and actuators to easily connect to the computer. Many artistic and technical projects throughout the world have now adopted its methodology; it is used at UC Berkeley's CNMAT in the 2006 Sensor Workshop for Performers and Artists (as taught by Adrian Freed and Michael Zbyszynski), the Kunstschole fur Medien in Cologne, Germany (course taught by Cornelius Poepel), Minnesota State University, Mankato (course taught by Dr. Mahbubur Rahman), STEIM (Amsterdam, The Netherlands), ZKM (Karlsruhe, Germany), and by many other academic institutions and private individuals around the world.
- 1990- **Concert Violinist, Championship Fiddler**  
 Associate Concertmaster, Chico Symphony, 1995-1997. Performed Mozart, Beethoven, and Mendelssohn violin concertos as soloist, and Dan's Medley (an original arrangement of jazz standards). Six-time winner of the California State Fiddling Championships ('86, '88, '91, '92, '94, '96). Five-time winner of the "Fanciest Fiddling" prize at the National Fiddling Contest ('86, '87, '88, '89, '91).
- 1983- **Television Appearances, Recording Engineer, and Studio Musician**  
 On-camera personality in a PBS network multi-media distance-learning project to teach music fundamentals at hundreds of universities and thousands of high schools around the world, 1997. Performed on the Morris Taylor show (Music Television), 1983-1996. Recordings (CompactDisc) available worldwide with a variety of performance groups and session recordings.
- 1991- **Private Pilot, Amateur Radio Operator**  
 Licensed pilot since 1997 (PPL, S/E Land, Sea), amateur radio since 1991 (FCC, Technician class privileges).