INTERNATIONAL WORKSHOP ON MOVEMENT AND COMPUTING (MOCO'14)

Intersecting Art, Meaning, Cognition, Technology

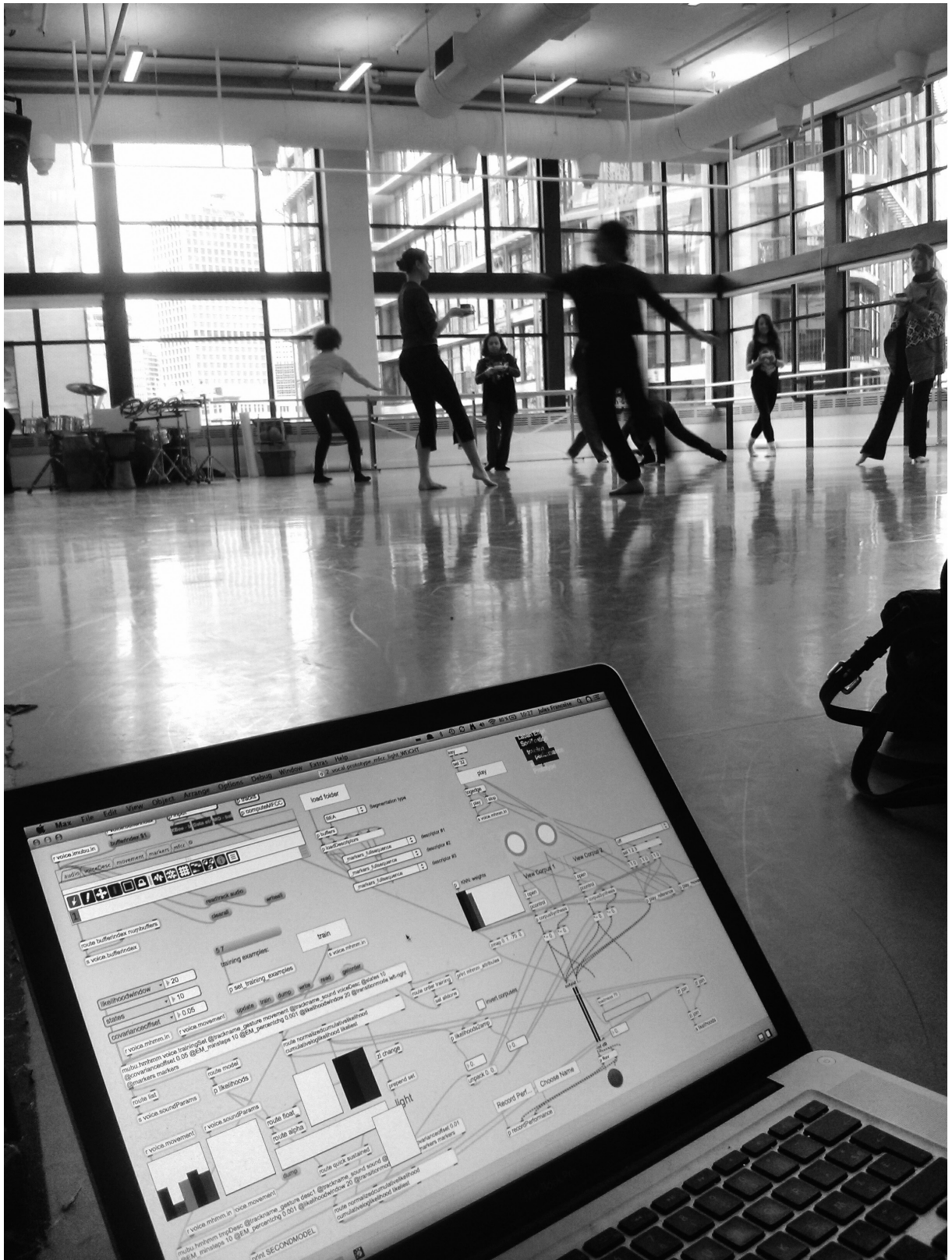**June 16-17, 2014**

IRCAM, Paris, France

http://moco.ircam.fr

MOCO is the first international workshop on movement and computing. It aims to gather academics, artists, and practitioners interested in the embodied and computational exploration, study, modeling, representation, segmentation, recognition, classification, or generation of movement meaning, mapping, semantics and data. MOCO is positioned within emerging interdisciplinary domains between art & science.

The workshop references the challenge of representing embodied movement knowledge within computational models, yet it also celebrates the inherent expression available within movement as a language. While human movement itself focuses on bodily experience, developing computational models for movement requires abstraction and representation of lived embodied cognition. Selecting appropriate models between movement and its rich personal and cultural meanings remains a challenge in movement interaction research.

Many fields, including interaction design, HCI, education and machine learning have been inspired by recent developments within neuroscience validating the primacy of movement in cognitive development and human intelligence. This has spawned a growing interest in experiential principles of movement awareness and mindfulness, while simultaneously fueling the need for developing computational models that can describe movement intelligence with greater rigor. This conference seeks to explore an equal and richly nuanced epistemological partnership between movement experience and movement cognition and computational representation.

MOCO papers will be published in the International Conference Proceedings Series published by ACM and available in the ACM Digital Library.

Overview

MONDAY	JUNE 16, 2014	TUESDAY	JUNE 17, 2014
8:30	Registration	8:30	Movement Warm-up
9:15	Welcome		
9:30	**Keynote:** David Kirsh	9:30	**Keynote:** Celine Latulipe
	Coffee break		*Coffee break*
11:00	**Session 1:** Choreography and Computing	11:00	**Session 4:** Computational Systems for Movement Analysis
12:40	Lunch	12:40	Lunch
14:00	**Session 2:** Movement Representation, Visualisation & Animation	14:00	**Session 5:** Movement and Music
	Coffee break		*Coffee break*
15:40	**Session 3:** Movement in Interactive Art	15:40	**Session 6:** Perspectives on Movement
16:40	Demos & Posters	16:40	Closing Discussion
20:00	Banquet (registered people)		

Monday, June 16, 2014

8:30 – 9:15: IRCAM lobby
➔ **Registration**

9:15 – 9:30: Stravinsky Room (level 0)
➔ **Welcome**

9:30 – 10:30: Stravinsky Room (level 0)
➔ **Keynote: David Kirsh – "A Cognitive Scientist Looks at Dance Making"**

10:30 – 11:00: (level -2)
➔ **Coffee Break**

11:00 – 12:40: Stravinsky Room (level 0)
➔ **Session 1: Choreography and Computing**

TIME	AUTHORS	TITLE
11:00	Sarah Fdili Alaoui, Kristin Carlson & Thecla Schiphorst	Choreography as Mediated through Compositional Tools for Movement: Constructing A Historical Perspective
11:20	Bertha Bermudez & Chris Ziegler	Pre-Choreographic Movement Kit
11:40	Shannon Cuykendall, Thecla Schiphorst & Jim Bizzocchi	Designing Interaction Categories for Kinesthetic Empathy: A Case Study of Synchronous Objects
12:00	Kirk Woolford	Capturing Movement in the Wild
12:20	Katerina El Raheb & Yannis Ioannidis	From Dance Notation to Conceptual Models: A Multilayer Approach

12:40 – 14:00: (level -2)
➔ **Lunch**

Monday, June 16, 2014

14:00 – 15:20: Stravinsky Room (level 0)
➔ **Session 2: Movement Representation, Visualisation & Animation**

TIME	AUTHORS	TITLE
14:00	Frederic Fol Leymarie, Prashant Aparajeya & Carol MacGillivray	Point-based Medialness for Movement Computing
14:20	Omid Alemi, Philippe Pasquier & Chris Shaw	Mova: Interactive Movement Analytics Platform
14:40	Aaron Levisohn & Thecla Schiphorst	Tagging with Movement: Somatic Strategies for Image Classification
15:00	Nesrine Fourati & Catherine Pelachaud	Collection and Characterization of Emotional Body Behaviors

15:20 – 15:40: (level -2)
➔ **Coffee Break**

15:40 – 16:40: Stravinsky Room (level 0)
➔ **Session 3: Movement in Interactive Art**

TIME	AUTHORS	TITLE
15:40	Grisha Coleman & Daragh Byrne	36 Walk: A Case Study of Reciprocity in Movement and Computation
16:00	Simon Biggs, Sue Hawksley & Garth Paine	Crosstalk: Making People in Interactive Spaces
16:20	Gregory Beller	The Synekine Project

Monday, June 16, 2014

16:40 – 18:40:
➔ **Posters:** (level -2)

AUTHORS	TITLE
Lamtharn Hantrakul & Konrad Kaczmarek	Implementations of the Leap Motion Device in Sound Synthesis and Interactive Live Performance
Mary Mainsbridge	Non-tactile Gestural Control in Musical Performance
Andrew Bluff & Andrew Johnston	Creative Control of Granular Synthesis Using Fluid Simulation & Motion Tracking
Donald Glowinski, Tamara Ott, Kanika Shirole, Naëm Baron, Kim Torres-Eliard, Marc-André Rappaz & Didier Grandjean	Analyzing Expressive Styles and Functions of Bodily Movement in Violinist Performance
Rebecca Warzer, Elizabeth B. Torres & Asaf Bachrach	Micro-Movement as Physical Signature of Movement Intention in Work of Choreographer Myriam Gourfink
Yohan Zeitoun	Perceptual Evaluation of Qualitative Information Conservation Within Point-Light Display
Alexander Berman & Valencia James	Towards a Live Dance Improvisation between an Avatar and a Human Dancer
Nicolas Bremard, Laurent Grisoni & Bruno De Araujo	Interaction Events in Contactless Gestural Systems: from Motion to Interaction
Marco Donnarumma	Notes on Bimodal Muscle Sensing for the Sonification of Indeterminate Motion
Christina Volioti, Sotiris Manitsaris & Athanasios Manitsaris	Offline Statistical Analysis of Gestural Skills in Pottery Interaction

16:40 – 18:40:
➔ **Demos**: studio 5 (level -2). Each demo has a corresponding paper or poster.

Bertha Bermudez & Chris Ziegler	Pre-Choreographic Movement Kit
Garth Paine, Simon Biggs & Sue Hawksley	Crosstalk
Jan C. Schacher & Daniel Bisig	Expressive Movement in Electronic Music Performance
Marco Donnarumma	Xth Sense

Tuesday, June 17, 2014

8:30 – 9:30: Studio 5 (level -2)
➔ **Movement Warm-up**

9:30 – 10:30: Stravinsky Room (level 0)
➔ **Keynote: Celine Latulipe – "Movement Work at a Distance: Affordances and Challenges"**

10:30 – 11:00: (level -2)
➔ **Coffee Break**

11:00 – 12:40: Stravinsky Room (level 0)
➔ **Session 4: Computational Systems for Movement Analysis**

TIME	AUTHORS	TITLE
11:00	John McCormick, Kim Vincs, Saeid Nahavandi, Douglas Creighton & Steph Hutchison	Teaching a Digital Performing Agent: Artificial Neural Network and Hidden Markov Model for Recognising and Performing Dance Movement
11:20	Baptiste Caramiaux	Motion Modeling for Expressive Interaction – A Design Proposal using Bayesian Adaptive Systems
11:40	Thierry Ravet, Joëlle Tilmanne & Nicolas D'Alessandro	Hidden Markov Model Based Real-Time Motion Recognition and Following
12:00	Vanessa Yaremchuk & Marcelo M. Wanderley	Brahms, Bodies and Backpropagation
12:20	Sam Ferguson, Emery Schubert & Catherine Stevens	Dynamic Dance Warping: Using Dynamic Time Warping to Compare Dance Movement Performed under Different Conditions

12:40 – 14:00: (level -2)
➔ **Lunch**

Tuesday, June 17, 2014

14:00 – 15:20: Stravinsky Room (level 0)
➔ **Session 5: Movement and Music**

TIME	AUTHORS	TITLE
14:00	Federico Visi, Rodrigo Schramm & Eduardo Miranda	Gesture in Performance with Traditional Musical Instruments and Electronics – Use of Embodied Music Cognition and Multimodal Motion Capture to Design Gestural Mapping Strategies
14:20	Jan C. Schacher & Daniel Bisig	Watch This! Expressive Movement in Electronic Music Performance
14:40	Benjamin Bacon, Marcelo Wanderley & Fabrice Marandola	Handedness in Percussion Sight-Reading
15:00	Alvaro Sarasua & Enric Guaus	Beat Tracking from Conducting Gestural Data: a Multi-Subject Study

15:20 – 15:40: (level -2)
➔ **Coffee Break**

15:40 – 16:40: Stravinsky Room (level 0)
➔ **Session 6: Perspectives on Movement**

TIME	AUTHORS	TITLE
15:40	Harry Brenton, Andrea Kleinsmith & Marco Gillies	Embodied Design of Dance Visualisations
16:00	Stina Nylander & Jakob Tholander	Designing for Movement – the Case of Sports
16:20	Sally-Jane Norman	Grappling with Movement Models: Performing Arts and Slippery Contexts

16:40 – 17:00: Stravinsky Room (level 0)
➔ **Closing Discussion**

Keynotes
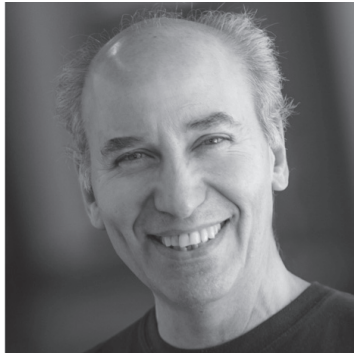
David Kirsh

Professor, University of California San Diego

A Cognitive Scientist Looks at Dance Making

David Kirsh is Professor and past chair of the Department of Cognitive Science at UCSD.
He was educated at Oxford University (D.Phil), did post doctoral research at MIT in the Artificial
Intelligence Lab, and has held research or visiting professor positions at MIT and Stanford
University. He has written extensively on situated and distributed cognition and especially on how
the environment can be shaped to simplify and extend cognition, including how we intelligently
use space, and how we use external representations to amplify and speed up thought. He runs
the Interactive Cognition Lab at UCSD where the focus is human-world coupling, and designing
environments to make us smarter. A recent project focuses on how humans think with their body,
specifically in dance making and choreographic cognition, and on distributed creativity in movement
design. This study is based on his six-year collaboration with Wayne McGregor and Random Dance.
He is co-Director of the Arthur C. Clarke Center for Human Imagination, and he is on the board of
directors for the Academy of Neuroscience for Architecture.
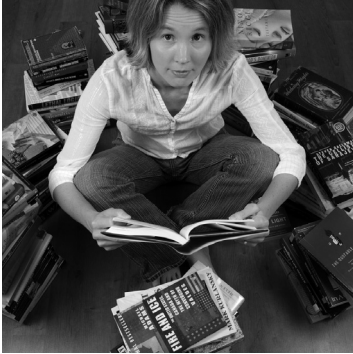
Celine Latulipe
Associate Professor, University of North Carolina at Charlotte

Movement Work at a Distance: Affordances and Challenges

Dr. Celine Latulipe has a PhD in Computer Science from the University of Waterloo in Canada. She is an Associate Professor of Human-Computer Interaction in the Department of Software and Information Systems in the College of Computing and Informatics at UNC Charlotte. Dr. Latulipe has long been fascinated by two-handed interaction in the real world, and the absence of it in the human-computer interface. She has developed numerous individual and collaborative multi-cursor interaction techniques and these have blossomed into an exploration of creative expression. Dr. Latulipe works on projects with choreographers, dancers, artists and theatre producers to better understand creative work in practice and how technology may play a role in supporting and evaluating creative work practices. Dr. Latulipe spent four years leading the Dance. Draw project, funded by an NSF CreativeIT grant.

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IRCAM, the Institute for Research and Coordination in Acoustics/Music, is one of the world's largest public research centers dedicated to both musical expression and scientific research. A unique location where artistic sensibilities collide with scientific and technological innovation, Frank Madlener has directed the institute since 2006, bringing together over 160 people.

IRCAM's three principal activities – creation, research, transmission – are visible in IRCAM's Parisian concert season, in productions throughout France and abroad, in a new rendezvous created in June 2012, ManiFeste, that combines an international festival with a multidisciplinary academy.

Founded by Pierre Boulez, IRCAM is associated with the Centre Pompidou, under the tutelage of the French Ministry of Culture and Communication. The mixed STMS research lab (Sciences and Technologies for Music and Sound), housed by IRCAM, also benefits from the support of the CNRS and the University Pierre and Marie Curie, as well as Inria (team-project MuTant).

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Acknowledgements

L'Ircam est associé au Centre Pompidou sous la tutelle du ministère de la Culture et de la Communication. L'Unité mixte de recherche STMS (Sciences et technologies de la musique et du son), hébergée par l'Ircam, bénéficie de plus des tutelles du CNRS et de l'université Pierre et Marie Curie, ainsi que, dans le cadre de l'équipe-projet MuTant, de l'Inria.

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