

ACM SIGGRAPH / Eurographics Symposium of Computer Animation 2024

McGill University, Montreal, Canada

August 21 to August 23, 2024

Conference Co-Chairs

Paul Kry, McGill University

Marie-Paule Cani, École Polytechnique

Program Co-Chairs

Melina Skouras, Inria Grenoble Rhone-Alpes

He Wang, University College London

Poster Chair

Victor Zordan, Roblox

supported by



EUROGRAPHICS
THE EUROPEAN ASSOCIATION
FOR COMPUTER GRAPHICS



ACM SIGGRAPH

Table of Contents

Gesture and Gaze Animation

- Learning to Play Guitar with Robotic Hands* e15166
Chaoyi Luo, Pengbin Tang, Yuqi Ma, and Dongjin Huang
- LLAniMAtion: LLAMA Driven Gesture Animation* e15167
Jonathan Windle, Iain Matthews, and Sarah Taylor
- Reactive Gaze during Locomotion in Natural Environments* e15168
Julia K. Melgaré, Damien Rohmer, Soraia R. Musse, and Marie-Paule Cani

Character Animation I: Synthesis and Capture

- Diffusion-based Human Motion Style Transfer with Semantic Guidance* e15169
Lei Hu, Zihao Zhang, Yongjing Ye, Yiwen Xu, and Shihong Xia
- Pose-to-Motion: Cross-Domain Motion Retargeting with Pose Prior* e15170
Qingqing Zhao, Peizhuo Li, Wang Yifan, Olga Sorkine-Hornung, and Gordon Wetzstein
- Long-term Motion In-betweening via Keyframe Prediction* e15171
Seokhyeon Hong, Haemin Kim, Kyungmin Cho, and Junyong Noh
- ADAPT: AI-Driven Artefact Purging Technique for IMU Based Motion Capture* e15172
Paul Schreiner, Rasmus Netterstrøm, Hang Yin, Sune Darkner, and Kenny Erleben

Character Animation II: Control

- Learning to Move Like Professional Counter-Strike Players* e15173
David Durst, Feng Xie, Vishnu Sarukkai, Brennan Shacklett, Iuri Frosio, Chen Tessler, Joochwan Kim, Carly Taylor, Gilbert Bernstein, Sanjiban Choudhury, Pat Hanrahan, and Kayvon Fatahalian
- PartwiseMPC: Interactive Control of Contact-Guided Motions* e15174
Niloofer Khoshsiyar, Ruiyu Gou, Tianhong Zhou, Sheldon Andrews, and Michiel van de Panne
- VMP: Versatile Motion Priors for Robustly Tracking Motion on Physical Characters* e15175
Agon Serifi, Ruben Grandia, Espen Knoop, Markus Gross, and Moritz Bächer

Animation and Cinematography

- SketchAnim: Real-time Sketch Animation Transfer from Videos* e15176
Gaurav Rai, Shreyas Gupta, and Ojaswa Sharma
- Creating a 3D Mesh in A-pose from a Single Image for Character Rigging* e15177
Seunghwan Lee and C. Karen Liu
- Garment Animation NeRF with Color Editing* e15178
Renke Wang, Meng Zhang, Jun Li, and Jian Yang
- Generating Flight Summaries Conforming to Cinematographic Principles* e15179
Christophe Lino and Marie-Paule Cani

Table of Contents

Physics I: Fluids, Shells, and Natural Phenomena

- Multiphase Viscoelastic Non-Newtonian Fluid Simulation* e15180
Yalan Zhang, Shen Long, Yanrui Xu, Xiaokun Wang, Chao Yao, Jiri Kosinka, Steffen Frey,
Alexandru Telea, and Xiaojuan Ban
- Reconstruction of Implicit Surfaces from Fluid Particles Using Convolutional Neural Networks* e15181
Chen Zhao, Tamar Shinar, and Craig Schroeder
- Unerosion: Simulating Terrain Evolution Back in Time* e15182
Zhanyu Yang, Guillaume Cordonnier, Marie-Paule Cani, Christian Perrenoud, and Bedrich Benes
- Curved Three-Director Cosserat Shells with Strong Coupling* e15183
Fabian Lösschner, José Antonio Fernández-Fernández, Stefan Rhys Jeske, and Jan Bender

Physics II: Cutting and Colliding

- Generalized eXtended Finite Element Method for Deformable Cutting via Boolean Operations* e15184
Quoc-Minh Ton-That, Paul G. Kry, and Sheldon Andrews
- Strongly Coupled Simulation of Magnetic Rigid Bodies* e15185
Lukas Westhofen, José Antonio Fernández-Fernández, Stefan Rhys Jeske, and Jan Bender
- A Multi-layer Solver for XPBD* e15186
Alexandre Mercier-Aubin and Paul G. Kry
- Robust and Artefact-Free Deformable Contact with Smooth Surface Representations* e15187
Yinwei Du, Yue Li, Stelian Coros, and Bernhard Thomaszewski

International Program Committee

Ando, Ryoichi – Unaffiliated
Andrews, Sheldon – École de technologie supérieure
Aristidou, Andreas – University of Cyprus & CYENS Centre of Excellence
Barbic, Jernej – University of Southern California
Batty, Christopher – University of Waterloo
Bender, Jan – RWTH Aachen University
Benes, Bedrich – Purdue University
Bickel, Bernd – IST Austria
Chen, Peter Yichen – Massachusetts Institute of Technology
Chen, Zhen – UT Austin
Chentanez, Nuttapon – NVIDIA
Chu, Mengyu – Peking University
Cirio, Gabriel – SEDDI
Deng, Zhigang – University of Houston
Durupinar Babur, Funda – UMASS Boston
Erleben, Kenny – Department of Computer Science, University of Copenhagen
Grinspun, Eitan – University of Toronto
He, Feixiang – University College London
Ho, Edmond S. L. – University of Glasgow
Holden, Daniel – Epic Games
Hoyet, Ludovic – Centre Inria de l'Université de Rennes
Jiang, Chenfanfu – UCLA
Jin, Xiaogang – State Key Lab of CAD&CG, Zhejiang University
Kapadia, Mubbasir – Rutgers
Kaufman, Danny – Adobe Research
Kim, Theodore – Yale University
Langlois, Timothy – Adobe
Lee, Sung-Hee – KAIST
Li, Jing – University of Utah
Li, Minchen – Carnegie Mellon University
Liu, Libin – Peking University
Liu, Tiantian – Taichi Graphics
Ly, Mickaël – IST Austria
Marchal, Maud – IRISA/INSA
Michels, Dominik – KAUST
Michiel, van de Panne – University of British Columbia
Musse, Soraia – PUCRS
Narain, Rahul – Indian Institute of Technology Delhi
Neff, Michael – University of California, Davis
Otaduy, Miguel A. – Universidad Rey Juan Carlos, Madrid
Pai, Dinesh – University of British Columbia
Pelechano, Nuria – Universitat Politecnica de Catalunya
Pettre, Julien – Inria
Pollard, Nancy – Carnegie Mellon University
Popa, Tiberiu – Concordia University

International Program Committee

Rohmer, Damien – Ecole Polytechnique
Schreck, Camille – Inria Nancy
Shinar, Tamar – UC RIVERSIDE
Stomakhin, Alexey – Weta Digital
Sueda, Shinjiro – Texas A&M University
Tang, Min – Zhejiang University
Teschner, Matthias – University of Freiburg
Thomaszewski, Bernhard – ETH Zurich
Umetani, Nobuyuki – The University of Tokyo
Vouga, Etienne – UT Austin
Wang, Stephanie – Independent Researcher
Wang, Yingying – McMaster University
Wojtan, Chris – Institute of Science and Technology Austria (ISTA)
Won, Jungdam – Seoul National University
Wu, Kui – LightSpeed Studios
Xie, Zhaoming – The AI Institute
Yang, Yin – The University of Utah
Ye, Yuting – Facebook Reality Labs
Zhao, Xi – Xi'an Jiaotong University
Zhu, Jialin – University College London
Zoss, Gaspard – DisneyResearchStudios

External Reviewer

Michel, Élie – Adobe Research

Author Index

Andrews, Sheldon	e15174, e15184	Melgaré, Julia K.	e15168
Ban, Xiaojuan	e15180	Mercier-Aubin, Alexandre	e15186
Bender, Jan	e15183, e15185	Musse, Soraia R.	e15168
Benes, Bedrich	e15182	Netterstrøm, Rasmus	e15172
Bernstein, Gilbert	e15173	Noh, Junyong	e15171
Bächer, Moritz	e15175	Panne, Michiel van de	e15174
Cani, Marie-Paule	e15168, e15179, e15182	Perrenoud, Christian	e15182
Cho, Kyungmin	e15171	Rai, Gaurav	e15176
Choudhury, Sanjiban	e15173	Rohmer, Damien	e15168
Cordonnier, Guillaume	e15182	Sarukkai, Vishnu	e15173
Coros, Stelian	e15187	Schreiner, Paul	e15172
Darkner, Sune	e15172	Schroeder, Craig	e15181
Du, Yinwei	e15187	Serifi, Agon	e15175
Durst, David	e15173	Shacklett, Brennan	e15173
Erleben, Kenny	e15172	Sharma, Ojaswa	e15176
Fatahalian, Kayvon	e15173	Shinar, Tamar	e15181
Fernández-Fernández, José A.	e15183, e15185	Sorkine-Hornung, Olga	e15170
Frey, Steffen	e15180	Tang, Pengbin	e15166
Frosio, Iuri	e15173	Taylor, Carly	e15173
Gou, Ruiyu	e15174	Taylor, Sarah	e15167
Grandia, Ruben	e15175	Telea, Alexandru	e15180
Gross, Markus	e15175	Tessler, Chen	e15173
Gupta, Shreyas	e15176	Thomaszewski, Bernhard	e15187
Hanrahan, Pat	e15173	Ton-That, Quoc-Minh	e15184
Hong, Seokhyeon	e15171	Wang, Renke	e15178
Hu, Lei	e15169	Wang, Xiaokun	e15180
Huang, Dongjin	e15166	Westhofen, Lukas	e15185
Jeske, Stefan Rhys	e15183, e15185	Wetzstein, Gordon	e15170
Khoshsiyar, Niloofar	e15174	Windle, Jonathan	e15167
Kim, Haemin	e15171	Xia, Shihong	e15169
Kim, Joohwan	e15173	Xie, Feng	e15173
Knoop, Espen	e15175	Xu, Yanrui	e15180
Kosinka, Jiri	e15180	Xu, Yiwen	e15169
Kry, Paul G.	e15184, e15186	Yang, Jian	e15178
Lee, Seunghwan	e15177	Yang, Zhanyu	e15182
Li, Jun	e15178	Yao, Chao	e15180
Li, Peizhuo	e15170	Ye, Yongjing	e15169
Li, Yue	e15187	Yifan, Wang	e15170
Lino, Christophe	e15179	Yin, Hang	e15172
Liu, C. Karen	e15177	Zhang, Meng	e15178
Long, Shen	e15180	Zhang, Yalan	e15180
Luo, Chaoyi	e15166	Zhang, Zihao	e15169
Löschner, Fabian	e15183	Zhao, Chen	e15181
Ma, Yuqi	e15166	Zhao, Qingqing	e15170
Matthews, Iain	e15167	Zhou, Tianhong	e15174

Keynote

Liquid Content: an Exploration of the Future of Culture and Creativity

Matthieu Lorrain

Abstract

Imagine stories that shape-shift with every watch, creating a personal revolution for each viewer. Dive into the world of AI-powered storytelling that's turning culture on its head. In this talk, Matthieu will explore the concept of Liquid Content, where narratives break free from their confines, offering an endless canvas of creativity.

Biographical Note

Matthieu Lorrain is a creative and technology pioneer in the fields of digital experiences & content innovation. He is currently Creative Lead, AI & Creativity Research at Google DeepMind. He is also the co-founder of fAke Artists, a creative collective exploring the future of post-reality experiences. Matthieu Lorrain has a long history working with global brands and tech companies to invent new types of user engagement. He has been exploring creative applications of emerging technologies for the last 20 years: ranging from interactive video to connected objects, augmented reality, and artificial intelligence. His most recent work focuses on how generative AI can supercharge the creative experience. His past projects have received multiple accolades from global organizations including Emmy Awards, Cannes Lions (Gold), Clios (Gold), Webby's, Tribeca Film Festival, '#1 Product Hunt of the Day' and FWA. Matthieu is a guest lecturer at Columbia University, where he delivered the inaugural masterclass on AI & Filmmaking in 2024. He is also frequently invited as featured speaker at major conferences. He has previously spoken at Cannes Lions (3x), SXSW, Spike Asia, 4A's Createtech and the NYC Tech Forum. Born & raised in the French Alps, Matthieu has lived in Rio de Janeiro, Montreal and Paris before moving to New York City in 2011. He holds a Master's degree in Cultural Studies from Institut d'Etudes Politiques and another in Marketing & Communication from ESCP Paris Business School.

Keynote

Is Data the Only Lever for Designing Interactive Simulations?

Maud Marchal

Abstract

The design of interactive simulations has always been struggling on the trade-off between accuracy and computation time performances. These last years, the rise of data-driven approaches has paved the way for new models offering outstanding results for several use cases. Thus, if the use of data is nowadays commonly accepted for some scenarios, it often remains uncertain how, when or where data can outperform more conventional approaches for designing interactive simulations. In this talk, I will illustrate how we can combine data-driven and model-based approaches for designing interactive simulations within the context of robotics and virtual reality applications.

Biographical Note

Maud Marchal is a Full Professor in Computer Science at Univ. Rennes, INSA/IRISA in France. She is also a Junior Member of Institut Universitaire de France since 2018. She works on physics-based simulation since her PhD in 2006 at University Joseph Fourier, Grenoble. Since 2008 and her position at INSA, she has explored and contributed to novel Virtual Reality and robotics applications, gathering her expertise on haptic feedback, 3D interaction techniques and interactive physics-based simulations. She is involved in program committees of major conferences of computer graphics, virtual reality and haptics and Associate Editor of IEEE Transactions on Visualization and Computer Graphics, IEEE Transactions on Haptics, ACM Transactions on Applied Perception and Computers & Graphics. She has notably been Program Chair of IEEE Virtual Reality Conference in 2018, 2020 and 2021, Program Chair of IEEE Symposium on Mixed and Augmented Reality in 2021 and 2023 and General Chair of ACM SIGGRAPH/Eurographics Symposium on Computer Animation in 2018 and Eurohaptics in 2024.

Keynote

Expressive Facial Modeling and Animation

Karan Singh

Abstract

Humans are hard-wired to see and interpret minute facial detail. The rich signals we extract from facial expressions set high expectations for computer-generated facial imagery. This talk focuses on the science and art of expressive facial animation. Specifically, aspects of facial anatomy, biomechanics, linguistics and perceptual psychology will be used to motivate and describe the construction of geometric face rigs, and techniques for the animator-centric creation of emotion, expression and speech animation from input images, audio and video. In some measure the talk will reveal some of the technological innovations that enabled the design and creation of faces in games like *Cyberpunk 2077* (Game of the year 2020), and films like *Avatar: the way of water* (Best VFX Oscar 2023).

Biographical Note

Karan Singh is a Professor of Computer Science at the University of Toronto. His research interests lie at the intersection of art, Computer Graphics (CG) and Human Computer Interaction (HCI): spanning interactive modeling and animation, visual perception, visualization and Augmented/Virtual Reality. Karan has been a research and development lead on the technical Oscar (2003) winning modeling and animation system Maya. He has co-founded multiple companies, most recently JALI Research. He was the R&D Director for the 2005 Oscar winning animated short film *Ryan*. His recent research in facial animation has been used on characters in AAA games like *Cyberpunk 2077* and *Call of Duty: Modern Warfare 2*, and films like *Avatar: the way of water* (Best VFX Oscar 2023).