Pacific Graphics 2021

The 29th Pacific Conference on Computer Graphics and Applications

Online Event
Wellington, New Zealand
October 18 – 21, 2021

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Preface

The 28th and 29th Pacific Conference on Computer Graphics and Applications (Pacific Graphics 20+21) are jointly hosted in Wellington, New Zealand. As a highly successful conference series, Pacific Graphics provides a premium forum for researchers, developers, and practitioners from around the world in computer graphics and related areas. The 2021 call for papers also changed the submission procedure and a call for Journal and Conference papers was released to further enrich the program. The joint PG 20+21 conference is a great platform for celebrating recent research achievements and, unifying years of contents, offers a very large selection of top contributions. Due to the world-wide travel restrictions during the COVID-19 pandemic, the conference is held fully online.

Pacific Graphics 2021 received 81 valid full paper submissions for the journal track. With the help of 76 international experts in our Program Committee and 71 external reviewers, we were able to evaluate each submission in a rigorous review process. By matching the paper research topics with the expertise and preferences of committee members, the program co-chairs assigned one primary and two secondary reviewers from the Program Committee to each paper. In case additional expertise was required, the primary reviewer could invite additional external reviewers. After the first cycle review, the authors could provide their rebuttal to address the major concerns from all the reviewers. The primary led a post-rebuttal discussion phase to form the senior recommendation based on a consensus among the reviewers, during which the reviewers were also asked to consider potential ethical issues that they could raise to the chairs, which were escalated to the steering committee when needed. Conditionally accepted full/short papers underwent a second review cycle by the primary reviewer to include the revisions required in the review summary.

Out of 81 journal track submissions, 26 full papers (acceptance rate: 32.1%) were finally accepted. All the full papers are published in the special issue of Computer Graphics Forum. There are eight more papers, which were referred to the regular submission process of Computer Graphics Forum due to required major revisions. The conference track is an important part of the conference technical program, including short papers, work-in-progress papers and poster papers. Three journal track submissions were instead accepted as conference short papers. All accepted conference track papers are invited to be presented at PG20+21 and published electronically through the EG Digital Library.

We would like to thank all the people that generously offered their time and energy to contribute to the review process and a successful technical programme of PG2021, including the authors of all submitted papers, the members of PG2021 Program Committees, and all the external reviewers. We also thank Stefanie Behnke for her handling and setup of the submission system, Bedrich Benes for his support regarding the reviewing schedule and for handling the referrals to CGF, Marc Stamminger for his help regarding the conference management and communication with EG. Finally, we would like to thank the Pacific Graphics Steering Committee for their great support.

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Xue, Tao
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Zhang, Rui-Si
Zhong, Rui
Zhuang, Yixin

Author Index

Author Index

TABLE OF CONTENTS

TABLE OF CONTENTS

Invited Talk

Creative AI: Turning 3D Virtual Worlds into Experimental Testbeds for Scientists

Marie-Paule Cani

Abstract

Visual representations are essential in science, as they facilitate intuition and ease communication. While the 2D sketches used for centuries recently evolved into 3D contents, the latter are generally not responsive: they do not allow scientists to interact with their models, change hypotheses on the fly and experiment their effects. In this talk, we explore the use of smart 3D environments as visual testbeds in science. We show that a combination of efficient procedural models expressing knowledge, expressive sculpting or sketching interfaces, and learning mechanisms, can help to reach this goal. We illustrate this through a variety of examples, from sculpting eroding mountains that express geological knowledge to helping prehistorians explore past ecosystems with flora and animated fauna.

Short Biography

Marie-Paule Cani is a Professor of Computer Science at Ecole Polytechnique (IP-Paris, France). Her research focuses on shape modelling and animation, with contributions to implicit surfaces, adaptive simulation methods and interactive natural scenes. She developed expressive ways to create them by combining sketching interfaces with models based on knowledge and learning. She received the Eurographics outstanding technical contributions award in 2011, was Siggraph Technical Papers Chair in 2017, joined the Siggraph Academy in 2019 and the French Academy of Sciences in 2020.

Invited Talk

AI for Perceiving Humans

Jan Kautz

Abstract

Perceiving humans, such as their pose, gaze, etc., of great interest for many practical applications, including human-machine interaction, activity recognition, video analytics, visual effects, gaming, and any other application involving humans in the scenes. I'll present a our work focusing on a detailed understanding of the human body from monocular RGB images. Specifically, I'll present deep learning methods for body pose estimation, hand pose estimation, fiducial landmark detection, and eye gaze estimation and redirection. We'll show how deep learning models can be made robust to face challenges posed by real-world scenarios and address the problem of data scarcity for training these methods.

Short Biography

Jan Kautz is VP of Learning and Perception Research at NVIDIA. Jan and his team pursue fundamental research in the areas of computer vision and deep learning, including visual perception, geometric vision, generative models, and efficient deep learning. Their work has been awarded various awards and has been regularly featured in the media. Before joining NVIDIA in 2013, Jan was a tenured faculty member at University College London. He holds an undergraduate degree in Computer Science (Universität Erlangen-Nürnberg), an MMath (University of Waterloo), a PhD degree (Max-Planck-Institut für Informatik), and worked as a post-doctoral researcher at the Massachusetts Institute of Technology.

Invited Talk

Facing the Future

Mark Sagar

Abstract

Creating intelligent and emotive interactive computer generated humans and characters capable of face to face interactions involves drawing on multiple disciplines.

Mark has been developing technology for digital faces for over twenty years (and counting). This talk will touch on some of the key factors in his journey.

Short Biography

Double Academy Award winner Dr. Mark Sagar is the Co-Founder and CEO of Soul Machines and director of the Laboratory for Animate Technologies at the Auckland Bioengineering Institute.

Mark and his team are bringing technology to life, pioneering the creation of autonomously animated virtual humans with virtual brains and nervous systems, capable of highly expressive face to face interaction and real-time learning and emotional response, to create the next generation of human interaction with artificial intelligence.

Mark has a Ph.D. in Engineering from the University of Auckland, and was a post-doctoral fellow at M.I.T. He previously worked as the Special Projects Supervisor at Weta Digital and Sony Pictures Imageworks and developed technology for the digital characters in blockbusters such Avatar, King Kong, and Spiderman 2. His pioneering work in computer-generated faces was recognized with two consecutive Scientific and Engineering Oscars in 2010 and 2011.

Mark was elected as a fellow of the Royal Society of New Zealand in 2019.