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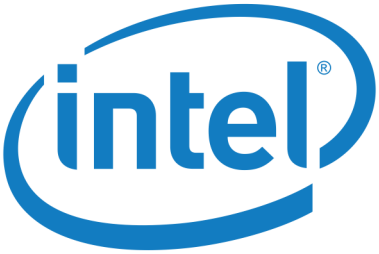

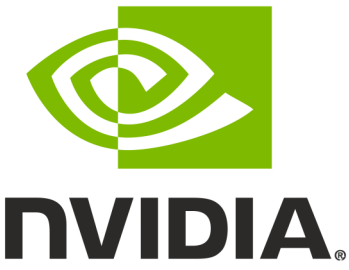

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(Guest Editors)

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Eurographics Distinguished Career Award 2020: Daniel Cohen-Or

Prof. Daniel Cohen-Or is well-known for his contributions in multiple areas, spanning Computer Graphics, Visual Computing, Geometric Modeling, and lately, Deep Learning for Geometry Processing. He received his BSc and MSc from Ben-Gurion University before receiving his PhD from State University of New York at Stony Brook in 1991. He is a full professor in the Department of Computer Science at Tel Aviv University.

Prof. Cohen-Or has made seminal contributions across multiple subtopics in Computer Graphics and Computer Vision. A common theme of his work is focusing on data representations (e.g., point clouds, meshes, volumetric data) and developing algorithms specialized for the chosen representation. For example, in his seminal paper "Laplacian surface editing", Prof. Cohen-Or along with his colleagues demonstrated that preserving local differential properties is the key to enabling intuitive surface deformation, or in "As-rigid-as-possible shape interpolation" decomposed shapes into simplicial complexes and morphed them with affine transforms, or in "iWIRES: an analyze-and-edit approach to shape manipulation" restored global structure in the form of algebraic relationships between extracted curves in man-made objects. His creativity is unmatched both in terms of introducing novel and interesting problems as well as proposing simple and insightful solutions to well-established problems.

Recently, in the deep learning era, he has developed many networks specifically for graphics applications. Notable examples include "MeshCNN" as the first network that operates directly on meshes, P2P-Net for geometric transformation between point clouds, or a host of generative networks for synthesizing novel textures, animation sequences, and 3D shapes. A hallmark of his research is the simplicity of the proposed solutions that reflects a deep understanding of the underlying problem and the ability to come up with effective solutions.

Many of his PhD students have gone on to establish world-leading research groups, both in academia and in industry. Prof. Cohen-Or has served in the editorial role in all major computer graphics journals including Computer Graphics Forum, IEEE TVCG, ACM TOG, and the Visual Computer. He has made significant contributions to the careers of many students and collaborators, and has influenced research in both image and geometry processing.

Prof. Cohen-Or has received several highly visible awards and distinctions including the Eurographics Outstanding Technical Contributions award in 2005, the People's Republic of China Friendship Award in 2013, and the Siggraph Computer Graphics Achievement Award in 2018. His large volume of work has shaped many areas of Computer Graphics and he has also been named a Thomson Reuters Highly Cited Researcher in 2015.

Prof. Cohen-Or receives the 2020 Eurographics Distinguished Career Award in recognition of his excellent, prolific, and seminal contributions to multiple areas in Computer Graphics.

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Eurographics Outstanding Technical Contributions Award 2020: Christian Theobalt

Prof. Christian Theobalt is a world-renowned expert working on problems at the intersection of computer graphics and computer vision. He has done pioneering work on methods for capturing and re-rendering models of the static and dynamic real world in motion from camera images. A core direction of his research is human performance capture, i.e. the process of reconstructing detailed geometric shapes and appearance of actors in motion from camera images. Prof. Theobalt was one of the founders of this sub-area and has helped to improve the methods from humble beginnings to a tool that is now routinely used in the movie industry. Prof. Theobalt is a highly prolific researcher, and his work is highly cited, with an explosive growth in citation numbers in recent years.

Several seminal works have come out of this activity. “Free-viewpoint video of human actors” (Siggraph 2003) showed one of the first approaches in computer graphics where a model-based representation of the human body is captured based on silhouette information and then free-viewpoint rendered from arbitrary camera views. This work was an initial step that demonstrated the power of marker-free motion capture and model-based 3D video of humans in action. Many improvements followed, including “Performance Capture from Sparse Multi-view Video” (Siggraph 2008), which for the first time demonstrated dense performance capture with loosely fitting clothing, as well as fast motion. In recent years, Prof. Theobalt pushed the boundary of marker-less human capture further. For instance, he developed “VNect” the first algorithms for real-time marker-less human motion capture with a single color camera (Siggraph 2017), and “LiveCap” the first algorithm for real-time dynamic geometry capture of humans in loose clothing from a single color camera (ACM TOG 2019). In addition, Prof. Theobalt did seminal work on marker-less hand motion capture and face performance capture, serving his goal to build new techniques for the creation of virtual humans.

Further on, Prof. Theobalt has recently presented new ways of deeply integrating model-based approaches from computer graphics and computer vision with concepts from deep learning. His landmark work on model-based face auto-encoders (CVPR 2017) was one of the first to show a hybrid algorithm combining a CNN-based encoder and a differentiable face renderer in an end-to-end-trainable architecture for dense reconstruction of face geometry, reflectance, and lighting. Christian Theobalt also made important contributions to lift neural rendering algorithms off the ground, a new class of image synthesis approaches uniting concepts from graphics and deep learning in new ways. An iconic example is his “Deep Video Portraits” (Siggraph 2018) algorithm that received large attention in both the scientific community and popular press. It uses a combination of model-based face reconstruction and neural network-based image synthesis to re-animate and edit human portrait videos in previously unseen video-realistic ways.

Prof. Theobalt’s contributions have earned him a number of highly visible awards and distinctions, including the Otto Hahn Medal 2006, the Eurographics Young Researcher Award in 2009, ERC Starting and Consolidator Grants in 2013 and 2017, respectively, and the Karlheinz Beckurts Award in 2017. Prof. Theobalt was also named as one of the "Top 40 under 40" Innovators in Germany by the business magazine Capital. He is also the co-founder of the award-winning spin-off company the Captury GmbH that commercializes the state-of-the-art system for marker-less motion capture from video.

Prof. Theobalt receives the 2020 Eurographics Outstanding Technical Contribution Award in recognition of his outstanding work at the interface of computer graphics and computer vision.

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Eurographics Young Researcher Award 2020: Marcel Campen

Marcel Campen is presented with the Eurographics Young Researcher Award 2020 in recognition of his outstanding contributions to Computer Graphics in the area of 3D Geometry Processing.

Marcel received his doctoral degree from RWTH Aachen University in 2014. His thesis was titled "Quad Layouts – Generation and Optimization of Conforming Quadrilateral Surface Partitions". After continuing his research as a postdoc at the Courant Institute at New York University and at RWTH Aachen from 2015-2017, he joined Osnabrück University as a professor in 2017.

Marcel has made profound contributions in various topics in 3D Geometry Processing, including surface and volume parameterization, meshing, and surface vector field processing, and some of his most significant results are highlighted here. A major focus of Marcel's research has been on quad meshing. This starts with his work on dual loops to obtain quad layouts on manifolds, which builds on the ingenious idea of carefully constructing the layout graph's combinatorial dual. Marcel followed up this work with many other elegant contributions such as performing quad meshing with integer-grid maps, level-of-detail, conforming partitions, or user interaction.

Another focus of his research has been on surface parameterization. In one of his earlier contributions, he introduced an elegant approach to obtain quantized or integral global surface parameterizations that are guaranteed to produce valid results. This was an important improvement over previous methods that suffered from robustness and efficiency issues. He subsequently built on these ideas to develop further contributions such as seamless parameterization techniques for surfaces with free boundaries or arbitrary genus, and distortion-minimizing maps between surfaces, just to name a few. All of this work stands out for how it leverages solid mathematical formulations and proofs to develop practical algorithms for important geometry processing problems.

The results of Marcel's research have been widely published in the premier computer graphics conferences and journals such as SIGGRAPH, SIGGRAPH Asia, and Eurographics. In addition, he has won two best paper awards for publications at the Symposium on Geometry Processing in 2010 and 2013, respectively. With his profound work on various problems in geometry processing, Marcel serves as an inspiration for the entire field.

Eurographics is pleased to recognize Marcel Campen with the 2020 Young Researcher Award.

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Eurographics Young Researcher Award 2020: Duygu Ceylan

Duygu Ceylan obtained her Ph.D. in 2014 from EPFL. She holds a Bachelor and Master in Computer Science from Middle East Technical University and Bilkent University, respectively, and currently works as a senior researcher at Adobe Research.

Duygu's research focuses on machine learning techniques and general computational methods to infer and analyze 3D information from images and videos. In her Ph.D. work at EPFL she focused on using computational shape understanding, specifically exploring symmetry priors, in the context of 3D reconstruction. This work is distinguished by a clear mathematical foundation to exploit semantic redundancy in structured environments, leading to robust algorithms for 3D scene modeling from image data. More recently, she explored machine learning methods for 3D scene understanding, geometry reconstruction, as well as human modeling. She proposed innovative neural network architectures for a variety of data modalities and inference tasks, thus significantly expanding the computational toolset for digital data analysis and modeling in computer graphics. Her work enables high-level understanding of visual and geometric data thus facilitating novel interaction schemes with applications ranging from image manipulation, human modeling, motion retargeting, to mechanism design.

Duygu has an impressive record of scientific achievements with a significant number of publications in the top venues of computer graphics, computer vision, and machine learning, such as ACM SIGGRAPH, CGF, CVPR, ECCV, and NeurIPS. In 2015 she received the Eurographics PhD award. Her work is distinguished by a combination of solid mathematical foundation with high practical relevance. She has consistently broken new ground in her research and serves as a role model to others.

Eurographics is pleased to recognize Duygu Ceylan with the 2020 Young Researcher Award in recognition of her outstanding contributions to Computer Graphics in the area of 3D Scene reconstruction and understanding.

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