Federico Perazzi

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Short Bio

I am a Research Scientist in the *Creative Intelligence Lab*, at Adobe Research. Prior to joining Adobe, I spent eight years as an Intern, Ph.D. and Post-Doctoral Researcher at Disney Research Zurich, in the *Imaging and Video Processing Group*. I obtained my Ph.D. in 2017 from the Department of Computer Science at ETH.

My research spans Computer Vision and Machine Learning with a focus on Video Analysis, Semantic Image Understanding, and Image Enhancement.

Employment History

2018 - present	Adobe Research, Bay Area, California *Research Scientist*
2017-2018	Disney Research, Zurich, Switzerland *Postdoctoral Researcher*
Oct 2012 - Feb 2013	Walt Disney Imagineering, Los Angeles, CA, United States *Advanced Development Intern*
Oct 2010 - Sep 2012	Disney Research, Zurich, Switzerland *Lab Associate*
May 2009 - Feb 2010	Carnegie Mellon University, Pittsburgh, PA, United States *Research Intern*

Technologies in Production

Denoising	We developed an ML-based denoiser of Monte-Carlo renderings. The technology has been integrated into Adobe *Dimension*, a software to create physically-based renderings of 3D asset. The denoiser reduces the time to generate a scene by an average of 8x on CPU.
Upsampling	I contributed to the video upsampling technology that is being used by Disney Studios to increase the resolution of movies while retaining fine texture details. The technology is described in our publication: *"A Fully Progressive Approach to Single-Image Super-Resolution"*.
VR Media	We designed and implemented a stitching technology to create artifact-free, high-resolution panoramic videos. The technology has been used to generate 8K panoramic videos for the Disney Parks attraction *Soarin' Around The World.* and for other Disney VR productions. Details of the technology are described in our EUROGRAPHICS 2015 publication: *"Panoramic Videos From Unstructured Camera Arrays"*.

Education

2013-2017 Ph.D. in Computer Science - ETH, joint Disney Research, Switzerland

General Topic: Video Object Segmentation.
Advisors: Prof. Markus Gross, Dr. Alexander Sorkine-Hornung (Disney Research)
Awarded with an ETH Medal for outstanding thesis.

2010-2012 M.Sc. in Computer Science - ETH, Zurich, Switzerland

Thesis: Fisheye Camera Array Calibration
GPA: 5.45 out of 6.0

2008-2010 M.Sc. in Entertainment Technology - Carnegie Mellon University, Pittsburgh, United States
GPA: 3.6 out of 4.0

2004-2008 B.Sc. in Computer Science - Universita degli Studi di Pavia, Pavia, Italy
GPA: 100 out of 110

Selected Publications

2019 Scaling Object Detection by Transferring Classification Weights.
J. Kuen, F. Perazzi, Z. Lin, J. Zhang, Y-P.Tan
ICCV 2019 (oral), Seoul, South Korea.

Synthetic to Real Translation Via Explicit Image Disentanglement.
S. Bi, K. Sunkavalli, F. Perazzi, E. Shechtman, V. Kim, R. Ramamoorthi
ICCV 2019, Seoul, South Korea.

Web Stereo Video Supervision for Depth Prediction from Dynamic Scenes.
C. Wang, S. Lucey, F. Perazzi, O. Wang
3DV 2019, Quebec City, Canada.

2018 On Regularized Losses for Weakly-supervised CNN Segmentation.
M. Tang, F. Perazzi, A. Djelouah, I. B. Ayed, C. Schroers, Y. Boykov.
ECCV 2018, Munich, Germany.

Normalized Cut Loss for Weakly-supervised CNN Segmentation.
M. Tang, A. Djelouah, F. Perazzi, Y. Boykov, C. Schroers.
CVPR 2018, Salt Lake City, UT, United States.

A Fully Progressive Approach to Single-Image Super-Resolution.
Y. Wang, F. Perazzi, B. McWilliams, A. Sorkine-Hornung, O. Sorkine-Hornung, C. Schroers.
CVPR NTIRE Workshop 2018, Salt Lake City, UT, United States.

2017 Learning Video Object Segmentation from Static Images.
F. Perazzi, A. Khoreva, R. Benenson, B. Schiele, M. Gross, A. Sorkine-Hornung.
CVPR 2017, Honolulu, HI, United States.

2016 A Benchmark Dataset and Evaluation Methodology for Video Object Segmentation.
F. Perazzi, J. Pont-Tuset, B. McWilliams, L. Van Gool, M. Gross, A. Sorkine-Hornung.
CVPR 2016, Las Vegas, NV, United States.

Bilateral Space Video Segmentation.
Nicolas Marki, Federico Perazzi, Oliver Wang, Alexander Sorkine-Hornung.
CVPR 2016, Las Vegas, NV, United States

2015 Fully Connected Object Proposal For Video Segmentation.
Federico Perazzi, Oliver Wang, Alexander Sorkine-Hornung, Markus Gross.
ICCV 2015, Santiago, Chile.

Panoramic Video From Unstructured Camera Arrays.
F. Perazzi, A. Sorkine-Hornung, H. Zimmer, P. Kaufmann, O. Wang, S. Watson, M. Gross.
EUROGRAPHICS 2015, Computer Graphics Forum, Vol. 34, No. 2, Zurich, Switzerland.

2013 Non-Polynomial Galerkin Projection on Deforming Meshes.
M. Stanton, Y. Sheng, M. Wicke, F. Perazzi, A. Yuen, S. Narasimhan, A. Treuille.
SIGGRAPH 2013, ACM Transactions on Graphics Vol. 32(4), Anaheim, CA, United States.

2012 Saliency Filters: Contrast Based Filtering for Salient Region Detection.
Federico Perazzi, Philipp Krähenbül, Yael Pritch, Alexander Hornung.
CVPR 2012, Providence, RI, United States.

Conference Workshops

2019 The 2019 DAVIS Challenge on VOS: Unsupervised Multi-Object Segmentation.
S. Caelles, J. Pont-Tuset, F. Perazzi, A. Montes, K.-K. Maninis, L. Van Gool.
CVPR 2019, Long Beach, California.

2018 The 2018 DAVIS Challenge on Video Object Segmentation.
S. Caelles, A. Montes, K.-K. Maninis, Y. Chen, L. Van Gool, F. Perazzi, J. Pont-Tuset.
CVPR 2018, Salt Lake City, Utah.

2017 The 2017 DAVIS Challenge on Video Object Segmentation
J. Pont-Tuset, F. Perazzi, S. Caelles, P. Arbeláez, A. Sorkine-Hornung, L. Van Gool.
CVPR 2017, Honolulu, Hawaii.

Supervised Students

Zhihao Xia, *Washington Uni. in St. Louis*
Ozge Yalcinkaya, *Hacettepe University*
Caner Harzirbas, *Apple*
Meng Tang, *Facebook Reality Labs*
Ping Hu, *Boston University*
Yifan Wang, *Disney Research*
Anna Khoreva, *Bosh AI*

Patents

2019 Video Super-Resolution Using An Artificial Neural Network.
C. Schroers, Y. Wang, F. Perazzi, B. McWilliams, A. Sorkine-Hornung.
US Patent App. 15/886,625

2018 Systems and Methods for Higher Order Dimensional Space Video Segmentation.
A. Sorkine-Hornung, F. Perazzi, O. Wang, N. Märki.
US Patent 9,911,194

2017 Video segmentation from an uncalibrated camera array.
H. Zimmer, A. Sorkine-Hornung, M. Botsch, F. Perazzi.
US Patent 15/176,017

2016 Methods and Systems of Performing Video Object Segmentation.
A. Sorkine-Hornung, F. Perazzi, O. Wang.
US Patent 15/045,102

2015 Visual Saliency Estimation for Images and Videos.
F. Perazzi, A. Sorkine-Hornung, P. Krähenbül, Y. Pritch.
US Patent 9,025,880

2014 Panoramic Video from Unstructured Camera Arrays with Globally Consistent Parallax.
F. Perazzi, A. Sorkine-Hornung, H. Zimmer, O. Wang, P. Kaufmann, S. Watson. Removal.
US Patent 14/339,253

2012 Robotic Texture.
P. Beardsley, J. Alonso Mora, A. Breitenmoser, F. Perazzi, A. Hornung.
US Patent 15/458,875