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Computer Vision – ECCV 2020

16th European Conference
Glasgow, UK, August 23–28, 2020
Proceedings, Part XIII

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ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Computer Science
ISBN 978-3-030-58600-3 ISBN 978-3-030-58601-0 (eBook)
<https://doi.org/10.1007/978-3-030-58601-0>

LNCS Sublibrary: SL6 – Image Processing, Computer Vision, Pattern Recognition, and Graphics

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Foreword

Hosting the European Conference on Computer Vision (ECCV 2020) was certainly an exciting journey. From the 2016 plan to hold it at the Edinburgh International Conference Centre (hosting 1,800 delegates) to the 2018 plan to hold it at Glasgow's Scottish Exhibition Centre (up to 6,000 delegates), we finally ended with moving online because of the COVID-19 outbreak. While possibly having fewer delegates than expected because of the online format, ECCV 2020 still had over 3,100 registered participants.

Although online, the conference delivered most of the activities expected at a face-to-face conference: peer-reviewed papers, industrial exhibitors, demonstrations, and messaging between delegates. In addition to the main technical sessions, the conference included a strong program of satellite events with 16 tutorials and 44 workshops.

Furthermore, the online conference format enabled new conference features. Every paper had an associated teaser video and a longer full presentation video. Along with the papers and slides from the videos, all these materials were available the week before the conference. This allowed delegates to become familiar with the paper content and be ready for the live interaction with the authors during the conference week. The live event consisted of brief presentations by the oral and spotlight authors and industrial sponsors. Question and answer sessions for all papers were timed to occur twice so delegates from around the world had convenient access to the authors.

As with ECCV 2018, authors' draft versions of the papers appeared online with open access, now on both the Computer Vision Foundation (CVF) and the European Computer Vision Association (ECVA) websites. An archival publication arrangement was put in place with the cooperation of Springer. SpringerLink hosts the final version of the papers with further improvements, such as activating reference links and supplementary materials. These two approaches benefit all potential readers: a version available freely for all researchers, and an authoritative and citable version with additional benefits for SpringerLink subscribers. We thank Alfred Hofmann and Aliaksandr Birukou from Springer for helping to negotiate this agreement, which we expect will continue for future versions of ECCV.

August 2020

Vittorio Ferrari
Bob Fisher
Cordelia Schmid
Emanuele Trucco

Preface

Welcome to the proceedings of the European Conference on Computer Vision (ECCV 2020). This is a unique edition of ECCV in many ways. Due to the COVID-19 pandemic, this is the first time the conference was held online, in a virtual format. This was also the first time the conference relied exclusively on the Open Review platform to manage the review process. Despite these challenges ECCV is thriving. The conference received 5,150 valid paper submissions, of which 1,360 were accepted for publication (27%) and, of those, 160 were presented as spotlights (3%) and 104 as orals (2%). This amounts to more than twice the number of submissions to ECCV 2018 (2,439). Furthermore, CVPR, the largest conference on computer vision, received 5,850 submissions this year, meaning that ECCV is now 87% the size of CVPR in terms of submissions. By comparison, in 2018 the size of ECCV was only 73% of CVPR.

The review model was similar to previous editions of ECCV; in particular, it was double blind in the sense that the authors did not know the name of the reviewers and vice versa. Furthermore, each conference submission was held confidentially, and was only publicly revealed if and once accepted for publication. Each paper received at least three reviews, totalling more than 15,000 reviews. Handling the review process at this scale was a significant challenge. In order to ensure that each submission received as fair and high-quality reviews as possible, we recruited 2,830 reviewers (a 130% increase with reference to 2018) and 207 area chairs (a 60% increase). The area chairs were selected based on their technical expertise and reputation, largely among people that served as area chair in previous top computer vision and machine learning conferences (ECCV, ICCV, CVPR, NeurIPS, etc.). Reviewers were similarly invited from previous conferences. We also encouraged experienced area chairs to suggest additional chairs and reviewers in the initial phase of recruiting.

Despite doubling the number of submissions, the reviewer load was slightly reduced from 2018, from a maximum of 8 papers down to 7 (with some reviewers offering to handle 6 papers plus an emergency review). The area chair load increased slightly, from 18 papers on average to 22 papers on average.

Conflicts of interest between authors, area chairs, and reviewers were handled largely automatically by the Open Review platform via their curated list of user profiles. Many authors submitting to ECCV already had a profile in Open Review. We set a paper registration deadline one week before the paper submission deadline in order to encourage all missing authors to register and create their Open Review profiles well on time (in practice, we allowed authors to create/change papers arbitrarily until the submission deadline). Except for minor issues with users creating duplicate profiles, this allowed us to easily and quickly identify institutional conflicts, and avoid them, while matching papers to area chairs and reviewers.

Papers were matched to area chairs based on: an affinity score computed by the Open Review platform, which is based on paper titles and abstracts, and an affinity

score computed by the Toronto Paper Matching System (TPMS), which is based on the paper's full text, the area chair bids for individual papers, load balancing, and conflict avoidance. Open Review provides the program chairs a convenient web interface to experiment with different configurations of the matching algorithm. The chosen configuration resulted in about 50% of the assigned papers to be highly ranked by the area chair bids, and 50% to be ranked in the middle, with very few low bids assigned.

Assignments to reviewers were similar, with two differences. First, there was a maximum of 7 papers assigned to each reviewer. Second, area chairs recommended up to seven reviewers per paper, providing another highly-weighted term to the affinity scores used for matching.

The assignment of papers to area chairs was smooth. However, it was more difficult to find suitable reviewers for all papers. Having a ratio of 5.6 papers per reviewer with a maximum load of 7 (due to emergency reviewer commitment), which did not allow for much wiggle room in order to also satisfy conflict and expertise constraints. We received some complaints from reviewers who did not feel qualified to review specific papers and we reassigned them wherever possible. However, the large scale of the conference, the many constraints, and the fact that a large fraction of such complaints arrived very late in the review process made this process very difficult and not all complaints could be addressed.

Reviewers had six weeks to complete their assignments. Possibly due to COVID-19 or the fact that the NeurIPS deadline was moved closer to the review deadline, a record 30% of the reviews were still missing after the deadline. By comparison, ECCV 2018 experienced only 10% missing reviews at this stage of the process. In the subsequent week, area chairs chased the missing reviews intensely, found replacement reviewers in their own team, and managed to reach 10% missing reviews. Eventually, we could provide almost all reviews (more than 99.9%) with a delay of only a couple of days on the initial schedule by a significant use of emergency reviews. If this trend is confirmed, it might be a major challenge to run a smooth review process in future editions of ECCV. The community must reconsider prioritization of the time spent on paper writing (the number of submissions increased a lot despite COVID-19) and time spent on paper reviewing (the number of reviews delivered in time decreased a lot presumably due to COVID-19 or NeurIPS deadline). With this imbalance the peer-review system that ensures the quality of our top conferences may break soon.

Reviewers submitted their reviews independently. In the reviews, they had the opportunity to ask questions to the authors to be addressed in the rebuttal. However, reviewers were told not to request any significant new experiment. Using the Open Review interface, authors could provide an answer to each individual review, but were also allowed to cross-reference reviews and responses in their answers. Rather than PDF files, we allowed the use of formatted text for the rebuttal. The rebuttal and initial reviews were then made visible to all reviewers and the primary area chair for a given paper. The area chair encouraged and moderated the reviewer discussion. During the discussions, reviewers were invited to reach a consensus and possibly adjust their ratings as a result of the discussion and of the evidence in the rebuttal.

After the discussion period ended, most reviewers entered a final rating and recommendation, although in many cases this did not differ from their initial recommendation. Based on the updated reviews and discussion, the primary area chair then

made a preliminary decision to accept or reject the paper and wrote a justification for it (meta-review). Except for cases where the outcome of this process was absolutely clear (as indicated by the three reviewers and primary area chairs all recommending clear rejection), the decision was then examined and potentially challenged by a secondary area chair. This led to further discussion and overturning a small number of preliminary decisions. Needless to say, there was no in-person area chair meeting, which would have been impossible due to COVID-19.

Area chairs were invited to observe the consensus of the reviewers whenever possible and use extreme caution in overturning a clear consensus to accept or reject a paper. If an area chair still decided to do so, she/he was asked to clearly justify it in the meta-review and to explicitly obtain the agreement of the secondary area chair. In practice, very few papers were rejected after being confidently accepted by the reviewers.

This was the first time Open Review was used as the main platform to run ECCV. In 2018, the program chairs used CMT3 for the user-facing interface and Open Review internally, for matching and conflict resolution. Since it is clearly preferable to only use a single platform, this year we switched to using Open Review in full. The experience was largely positive. The platform is highly-configurable, scalable, and open source. Being written in Python, it is easy to write scripts to extract data programmatically. The paper matching and conflict resolution algorithms and interfaces are top-notch, also due to the excellent author profiles in the platform. Naturally, there were a few kinks along the way due to the fact that the ECCV Open Review configuration was created from scratch for this event and it differs in substantial ways from many other Open Review conferences. However, the Open Review development and support team did a fantastic job in helping us to get the configuration right and to address issues in a timely manner as they unavoidably occurred. We cannot thank them enough for the tremendous effort they put into this project.

Finally, we would like to thank everyone involved in making ECCV 2020 possible in these very strange and difficult times. This starts with our authors, followed by the area chairs and reviewers, who ran the review process at an unprecedented scale. The whole Open Review team (and in particular Melisa Bok, Mohit Unyal, Carlos Mondragon Chapa, and Celeste Martinez Gomez) worked incredibly hard for the entire duration of the process. We would also like to thank René Vidal for contributing to the adoption of Open Review. Our thanks also go to Laurent Charling for TPMS and to the program chairs of ICML, ICLR, and NeurIPS for cross checking double submissions. We thank the website chair, Giovanni Farinella, and the CPI team (in particular Ashley Cook, Miriam Verdon, Nicola McGrane, and Sharon Kerr) for promptly adding material to the website as needed in the various phases of the process. Finally, we thank the publication chairs, Albert Ali Salah, Hamdi Dibeklioglu, Metehan Doyran, Henry Howard-Jenkins, Victor Prisacariu, Siyu Tang, and Gul Varol, who managed to compile these substantial proceedings in an exceedingly compressed schedule. We express our thanks to the ECVA team, in particular Kristina Scherbaum for allowing open access of the proceedings. We thank Alfred Hofmann from Springer who again

serve as the publisher. Finally, we thank the other chairs of ECCV 2020, including in particular the general chairs for very useful feedback with the handling of the program.

August 2020

Andrea Vedaldi
Horst Bischof
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Contents – Part XIII

Fashion Captioning: Towards Generating Accurate Descriptions with Semantic Rewards	1
<i>Xuewen Yang, Heming Zhang, Di Jin, Yingru Liu, Chi-Hao Wu, Jianchao Tan, Dongliang Xie, Jue Wang, and Xin Wang</i>	
Reducing Language Biases in Visual Question Answering with Visually-Grounded Question Encoder	18
<i>Gouthaman KV and Anurag Mittal</i>	
Unsupervised Cross-Modal Alignment for Multi-person 3D Pose Estimation	35
<i>Jogendra Nath Kundu, Ambareesh Revanur, Govind Vitthal Waghmare, Rahul Mysore Venkatesh, and R. Venkatesh Babu</i>	
Class-Incremental Domain Adaptation	53
<i>Jogendra Nath Kundu, Rahul Mysore Venkatesh, Naveen Venkat, Ambareesh Revanur, and R. Venkatesh Babu</i>	
Anti-bandit Neural Architecture Search for Model Defense.	70
<i>Hanlin Chen, Baochang Zhang, Song Xue, Xuan Gong, Hong Liu, Rongrong Ji, and David Doermann</i>	
Wavelet-Based Dual-Branch Network for Image Demoiréing	86
<i>Lin Liu, Jianzhuang Liu, Shanxin Yuan, Gregory Slabaugh, Aleš Leonardis, Wengang Zhou, and Qi Tian</i>	
Low Light Video Enhancement Using Synthetic Data Produced with an Intermediate Domain Mapping	103
<i>Danai Triantafyllidou, Sean Moran, Steven McDonagh, Sarah Parisot, and Gregory Slabaugh</i>	
Non-local Spatial Propagation Network for Depth Completion	120
<i>Jinsun Park, Kyungdon Joo, Zhe Hu, Chi-Kuei Liu, and In So Kweon</i>	
DanbooRegion: An Illustration Region Dataset	137
<i>Lymin Zhang, Yi Ji, and Chunping Liu</i>	
Event Enhanced High-Quality Image Recovery	155
<i>Bishan Wang, Jingwei He, Lei Yu, Gui-Song Xia, and Wen Yang</i>	
PackDet: Packed Long-Head Object Detector	172
<i>Kun Ding, Guojin He, Huxiang Gu, Zisha Zhong, Shiming Xiang, and Chunhong Pan</i>	

A Generic Graph-Based Neural Architecture Encoding Scheme for Predictor-Based NAS	189
<i>Xuefei Ning, Yin Zheng, Tianchen Zhao, Yu Wang, and Huazhong Yang</i>	
Learning Semantic Neural Tree for Human Parsing	205
<i>Ruyi Ji, Dawei Du, Libo Zhang, Longyin Wen, Yanjun Wu, Chen Zhao, Feiyue Huang, and Siwei Lyu</i>	
Sketching Image Gist: Human-Mimetic Hierarchical Scene Graph Generation	222
<i>Wenbin Wang, Ruiping Wang, Shiguang Shan, and Xilin Chen</i>	
Burst Denoising via Temporally Shifted Wavelet Transforms	240
<i>Xuejian Rong, Denis Demandolx, Kevin Matzen, Priyam Chatterjee, and Yingli Tian</i>	
JSSR: A Joint Synthesis, Segmentation, and Registration System for 3D Multi-modal Image Alignment of Large-Scale Pathological CT Scans	257
<i>Fengze Liu, Jinzheng Cai, Yuankai Huo, Chi-Tung Cheng, Ashwin Raju, Dakai Jin, Jing Xiao, Alan Yuille, Le Lu, ChienHung Liao, and Adam P. Harrison</i>	
SimAug: Learning Robust Representations from Simulation for Trajectory Prediction	275
<i>Junwei Liang, Lu Jiang, and Alexander Hauptmann</i>	
ScribbleBox: Interactive Annotation Framework for Video Object Segmentation	293
<i>Bowen Chen, Huan Ling, Xiaohui Zeng, Jun Gao, Ziyue Xu, and Sanja Fidler</i>	
Rethinking Pseudo-LiDAR Representation	311
<i>Xinzhu Ma, Shinan Liu, Zhiyi Xia, Hongwen Zhang, Xingyu Zeng, and Wanli Ouyang</i>	
Deep Multi Depth Panoramas for View Synthesis	328
<i>Kai-En Lin, Zexiang Xu, Ben Mildenhall, Pratul P. Srinivasan, Yannick Hold-Geoffroy, Stephen DiVerdi, Qi Sun, Kalyan Sunkavalli, and Ravi Ramamoorthi</i>	
MINI-Net: Multiple Instance Ranking Network for Video Highlight Detection	345
<i>Fa-Ting Hong, Xuanteng Huang, Wei-Hong Li, and Wei-Shi Zheng</i>	
ContactPose: A Dataset of Grasps with Object Contact and Hand Pose	361
<i>Samarth Brahmabhatt, Chengcheng Tang, Christopher D. Twigg, Charles C. Kemp, and James Hays</i>	

API-Net: Robust Generative Classifier via a Single Discriminator	379
<i>Xinshuai Dong, Hong Liu, Rongrong Ji, Liujuan Cao, Qixiang Ye, Jianzhuang Liu, and Qi Tian</i>	
Bias-Based Universal Adversarial Patch Attack for Automatic Check-Out . . .	395
<i>Aishan Liu, Jiakai Wang, Xianglong Liu, Bowen Cao, Chongzhi Zhang, and Hang Yu</i>	
Imbalanced Continual Learning with Partitioning Reservoir Sampling	411
<i>Chris Dongjoo Kim, Jinseo Jeong, and Gunhee Kim</i>	
Guided Collaborative Training for Pixel-Wise Semi-Supervised Learning . . .	429
<i>Zhanghan Ke, Di Qiu, Kaican Li, Qiong Yan, and Rynson W. H. Lau</i>	
Stacking Networks Dynamically for Image Restoration Based on the Plug-and-Play Framework	446
<i>Haixin Wang, Tianhao Zhang, Muzhi Yu, Jinan Sun, Wei Ye, Chen Wang, and Shikun Zhang</i>	
Efficient Transfer Learning via Joint Adaptation of Network Architecture and Weight	463
<i>Ming Sun, Haoxuan Dou, and Junjie Yan</i>	
Spatial Attention Pyramid Network for Unsupervised Domain Adaptation . . .	481
<i>Congcong Li, Dawei Du, Libo Zhang, Longyin Wen, Tiejian Luo, Yanjun Wu, and Pengfei Zhu</i>	
GSIR: Generalizable 3D Shape Interpretation and Reconstruction	498
<i>Jianren Wang and Zhaoyuan Fang</i>	
Weakly Supervised 3D Object Detection from Lidar Point Cloud	515
<i>Qinghao Meng, Wenguan Wang, Tianfei Zhou, Jianbing Shen, Luc Van Gool, and Dengxin Dai</i>	
Two-Phase Pseudo Label Densification for Self-training Based Domain Adaptation	532
<i>Inkyu Shin, Sanghyun Woo, Fei Pan, and In So Kweon</i>	
Adaptive Offline Quintuplet Loss for Image-Text Matching	549
<i>Tianlang Chen, Jiajun Deng, and Jiebo Luo</i>	
Learning Object Placement by Inpainting for Compositional Data Augmentation	566
<i>Lingzhi Zhang, Tarmily Wen, Jie Min, Jiancong Wang, David Han, and Jianbo Shi</i>	

Deep Vectorization of Technical Drawings.	582
<i>Vage Egiazarian, Oleg Voynov, Alexey Artemov, Denis Volkhonskiy, Aleksandr Safin, Maria Taktasheva, Denis Zorin, and Evgeny Burnaev</i>	
CAD-Deform: Deformable Fitting of CAD Models to 3D Scans	599
<i>Vladislav Ishimtsev, Alexey Bokhovkin, Alexey Artemov, Savva Ignatyev, Matthias Niessner, Denis Zorin, and Evgeny Burnaev</i>	
An Image Enhancing Pattern-Based Sparsity for Real-Time Inference on Mobile Devices	629
<i>Xiaolong Ma, Wei Niu, Tianyun Zhang, Sijia Liu, Sheng Lin, Hongjia Li, Wujie Wen, Xiang Chen, Jian Tang, Kaisheng Ma, Bin Ren, and Yanzhi Wang</i>	
AutoTrajectory: Label-Free Trajectory Extraction and Prediction from Videos Using Dynamic Points.	646
<i>Yuxin Ma, Xinge Zhu, Xinjing Cheng, Ruigang Yang, Jiming Liu, and Dinesh Manocha</i>	
Multi-agent Embodied Question Answering in Interactive Environments	663
<i>Sinan Tan, Weilai Xiang, Huaping Liu, Di Guo, and Fuchun Sun</i>	
Conditional Sequential Modulation for Efficient Global Image Retouching. . .	679
<i>Jingwen He, Yihao Liu, Yu Qiao, and Chao Dong</i>	
Segmenting Transparent Objects in the Wild	696
<i>Enze Xie, Wenjia Wang, Wenhai Wang, Mingyu Ding, Chunhua Shen, and Ping Luo</i>	
Length-Controllable Image Captioning.	712
<i>Chaoxun Deng, Ning Ding, Minghui Tan, and Qi Wu</i>	
Few-Shot Semantic Segmentation with Democratic Attention Networks	730
<i>Haochen Wang, Xudong Zhang, Yutao Hu, Yandan Yang, Xianbin Cao, and Xiantong Zhen</i>	
Defocus Blur Detection via Depth Distillation.	747
<i>Xiaodong Cun and Chi-Man Pun</i>	
Motion Guided 3D Pose Estimation from Videos	764
<i>Jingbo Wang, Sijie Yan, Yuanjun Xiong, and Dahua Lin</i>	
Reflection Separation via Multi-bounce Polarization State Tracing.	781
<i>Rui Li, Simeng Qiu, Guangming Zang, and Wolfgang Heidrich</i>	
Author Index	797