Welcome to CVPR 2020!

IEEE computer society

CVF

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Virtual CVPR20 timeline

- Seattle cancelled large in-person events on March 11
- Until May 6 (!) we had to plan for a hybrid meeting, with a physical as well as a virtual component
  - This put nearly every important decision on hold
- The vendor selected to build the CVPR20 virtual conference infrastructure backed out on May 11
- Only last-minute heroic efforts by Terry Boult allowed a virtual CVPR20 to take place

Virtual CVPR20 challenges

- Due to the compressed timeline, we rushed to prioritize the main conference
- As a result, we were unable to provide the same level of support to tutorials and workshops
- We failed in establishing and meeting high standards for diversity, inclusion and accessibility
- We have learned several important lessons, and are putting the learnings in effect for all upcoming events

Impact on tutorials and workshops

- 48 tutorials proposed, 31 accepted, 2 later withdrew
- 127 workshops proposed, 67 accepted, 3 later withdrew

- After consultation with industry, the expo was cancelled
- Opportunities still available for sponsors and patrons

Keynotes

Computer Vision is now a solid component of many real world applications
We are delighted to have 2 leaders from industry share their perspective

Satya Nadella (CEO, Microsoft)
Fireside chat with **Harry Shum** on Tuesday, right after this session

Charlie Bell (SVP, Amazon Web Services)
Fireside chat with **Jitendra Malik** on Thursday at 2pm PST

Virtual infrastructure

Immense level gratitude is due to **Terry Boult** and his team of students, postdocs and volunteers.

On a ridiculously short timeframe, they built a full scalable infrastructure with worldwide access. Without them there would be no CVPR20 meeting.

Their effort received substantial support from Alibaba and AWS. We also thank Shenghua Gao and Jingyi Yu (both from Shanghai Tech) for helping provide permission to support attendance in China.

Our sponsors

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CVPR Virtual Sponsors

Champions

Supporter

PAMI TC Awards

On behalf of the PAMI TC, which supervises CVPR, and its chair Bryan Morse, we are pleased to present the following awards.

These PAMI TC awards are distinct from the awards for papers submitted to CVPR20, which are selected by this year’s program chairs.

The PAMI TC awards are selected by a standing awards committee. The awards come with a plaque and a cash prize of $3,000.

PAMI Longuet-Higgins Prize

Retrospective Highest Impact Paper from CVPR 2010

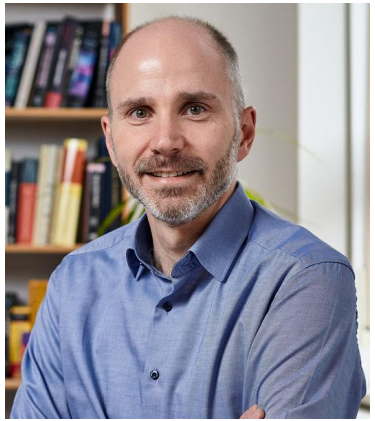
Awards Committee:

- David Forsyth (chair)
- Kyoung Mu Lee
- Rick Szeliski

PAMI Longuet-Higgins Prize

Retrospective Highest Impact Paper from CVPR 2010

“***Secrets of Optical Flow Estimation and Their Principles***”
Deqing Sun, Stefan Roth and Michael J. Black


Additional 2007 PAMI Longuet-Higgins Prize

Retrospective Highest Impact Paper from CVPR 2007

“***Accurate, Dense, and Robust Multi-view Stereopsis***”
Yasutaka Furukawa and Jean Ponce

PAMI Young Researcher Award

Sponsored by Image and Vision Computing (Elsevier)

Awards Committee:

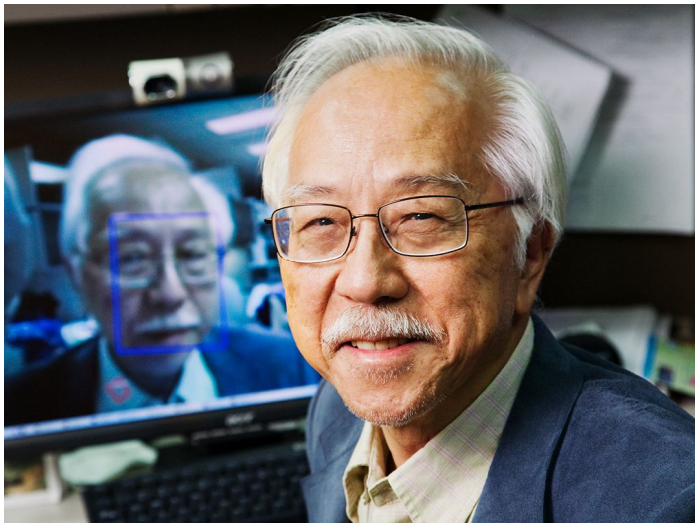
- Ramin Zabih (chair)
- Andrew Fitzgibbon
- Kristen Grauman
- Maja Pantic
- Nikos Paragios
- Cordelia Schmid

PAMI Young Researcher Award

Jon Barron

Deqing Sun

Thomas S. Huang



Thomas Huang passed away on April 25, 2020.

Huang was one of the leading figures in computer vision, pattern recognition and human computer interaction.

Thomas S. Huang memorial prize

The PAMITC executive committee has approved the creation of the Thomas S. Huang memorial prize in computer vision, to be awarded annually at CVPR starting in 2021.

The award winner will be selected by the PAMITC awards committee, similarly to the Rosenfeld and Distinguished Researcher awards, and will have the same financial remuneration.

Researchers who are more than 10 years past their PhD are eligible. The winner will be selected based on a combination of research, service and mentoring. Additional details will be made available before CVPR21.

Video remembrance

Professor Huang’s students have prepared a video tribute

YouTube: https://youtu.be/QV7WnO9Lk9M
Bilibili: https://www.bilibili.com/video/BV1dt4y1X7YB
Website: https://www.thomasmargarethuang.com

CVPR 2020
(virtual) Seattle
June 14-20, 2020

Welcome to CVPR 2020!

Virtual Program Overview

(this will be a standalone video)

Seattle Time	Sunday June 14	Monday June 15	Tuesday June 16	Wednesday June 17	Thursday June 18	Friday June 19
8:30:00 AM	Workshops Tutorials	Workshops Tutorials	Main Conference	Main Conference	Main Conference	Workshops Tutorials
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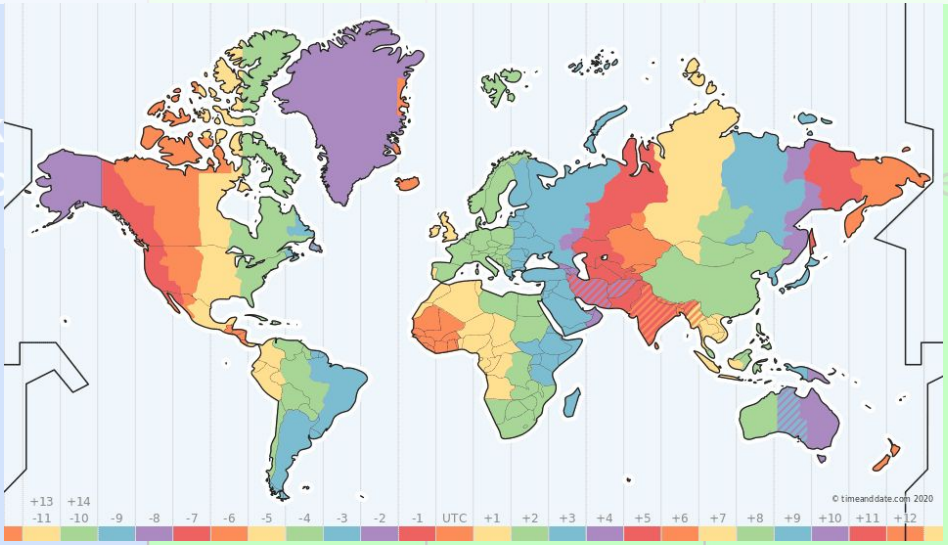
Each session repeats 12 hours later



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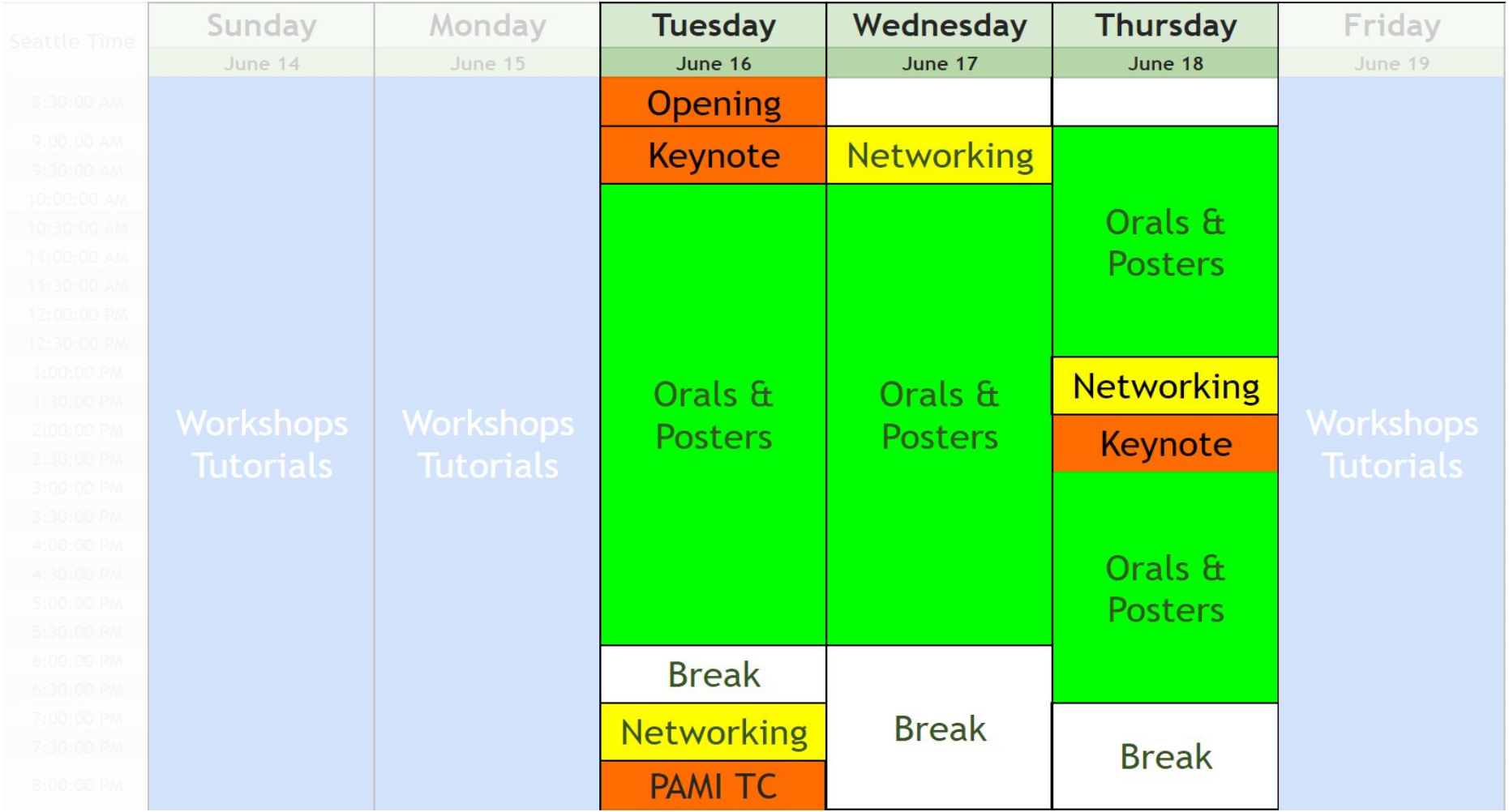
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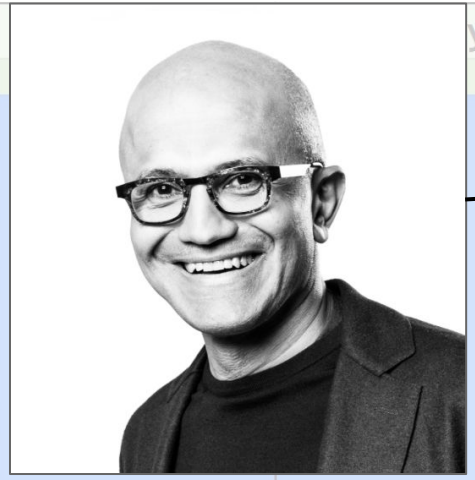

Workshops Tutorials

Workshops Tutorials

Workshops Tutorials

How to attend CVPR

The “lazy” way

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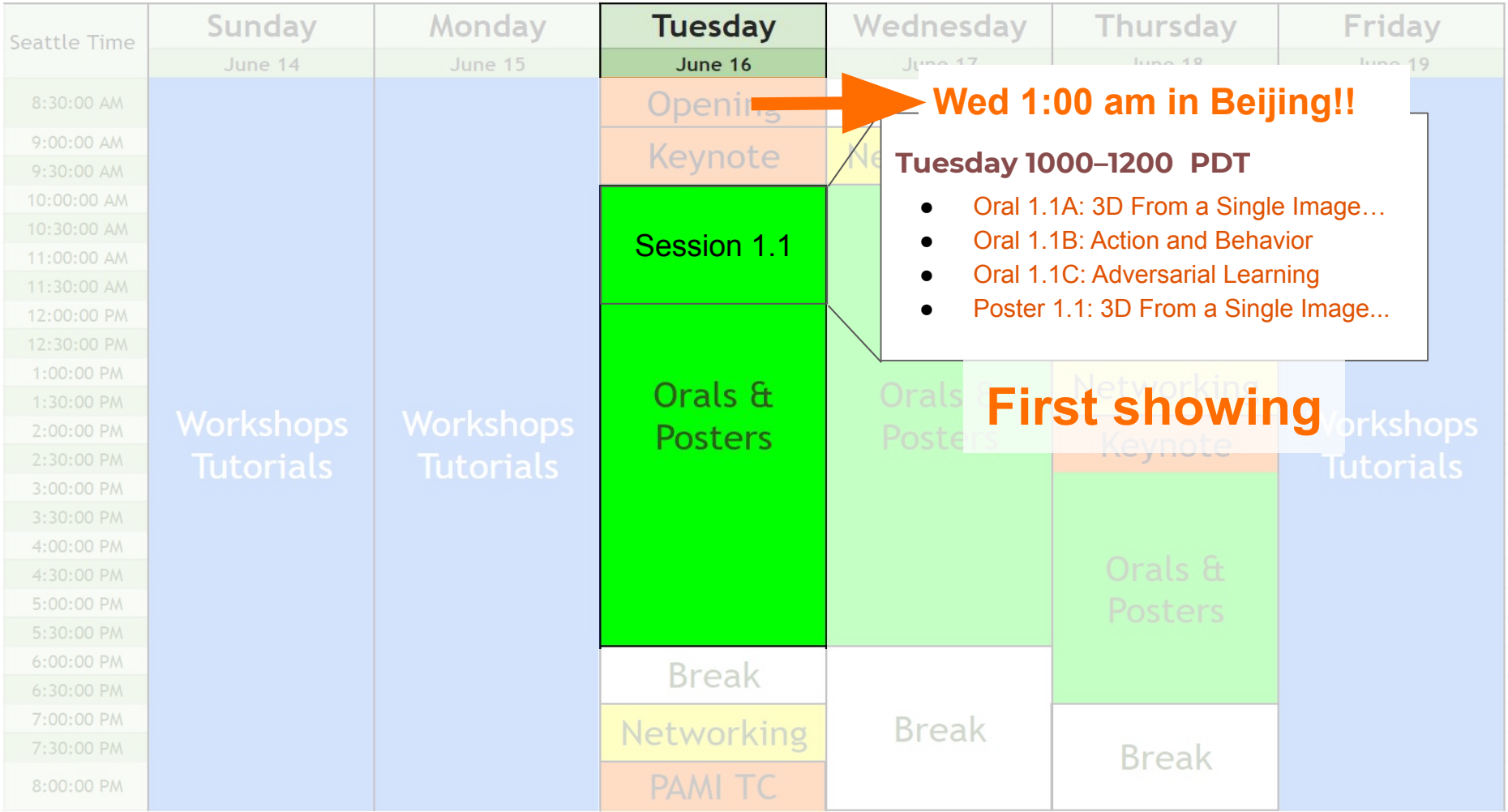
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Tuesday 1000–1200 PDT
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Oral 1.1B: Action and Behavior
Oral 1.1C: Adversarial Learning
Poster 1.1: 3D From a Single Image...
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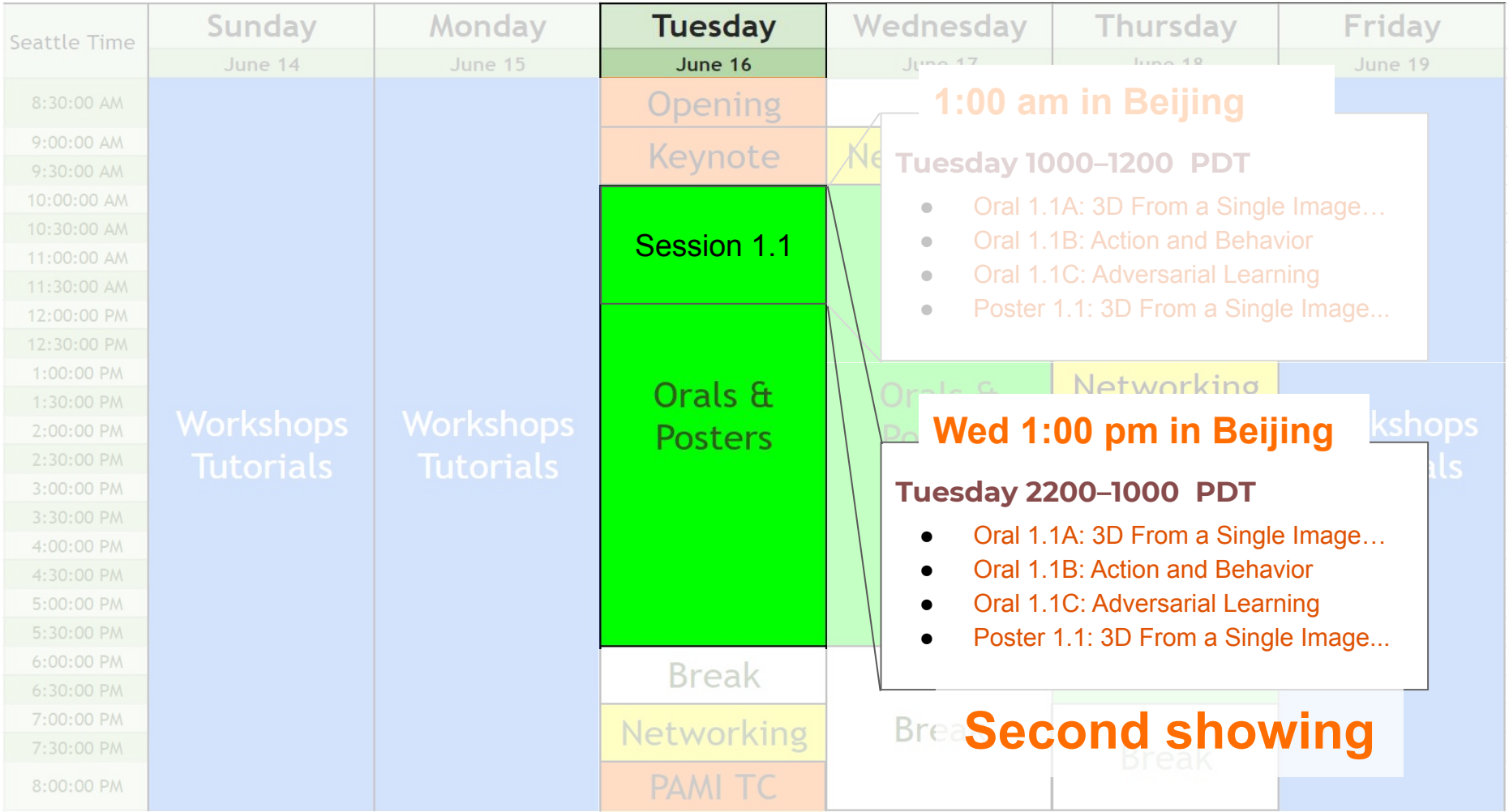
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Oral 1.1B: Action and Behavior
Oral 1.1C: Adversarial Learning
Poster 1.1: 3D From a Single Image...
Wed 1:00 pm in Beijing
Tuesday 2200–1000 PDT
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Oral 1.1B: Action and Behavior
Oral 1.1C: Adversarial Learning
Poster 1.1: 3D From a Single Image...
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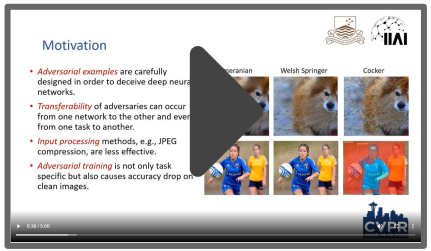
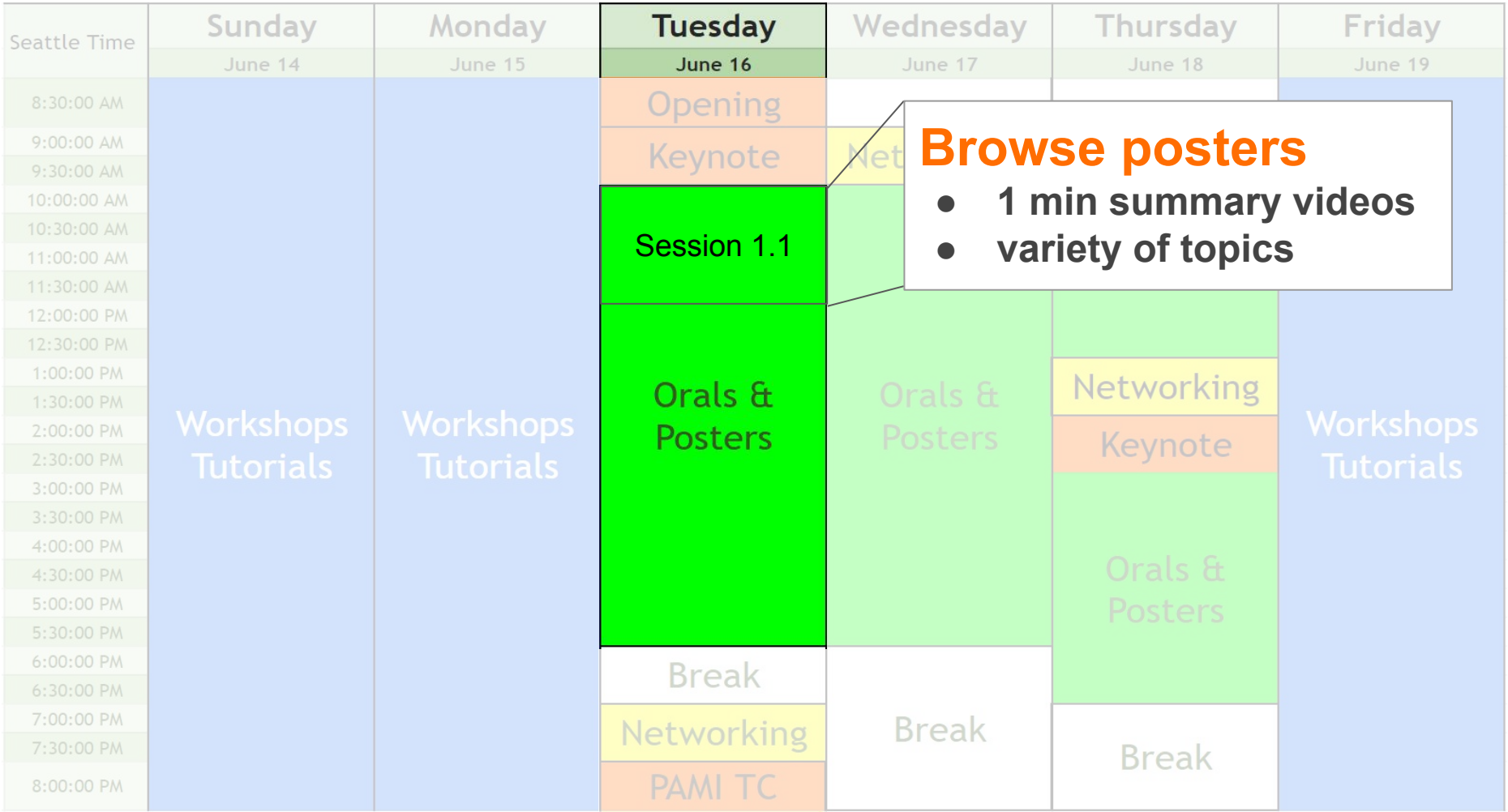
Watch oral session

- 5 min each
- Total watch time ~1 hr

Oral 1.1C: Adversarial Learning

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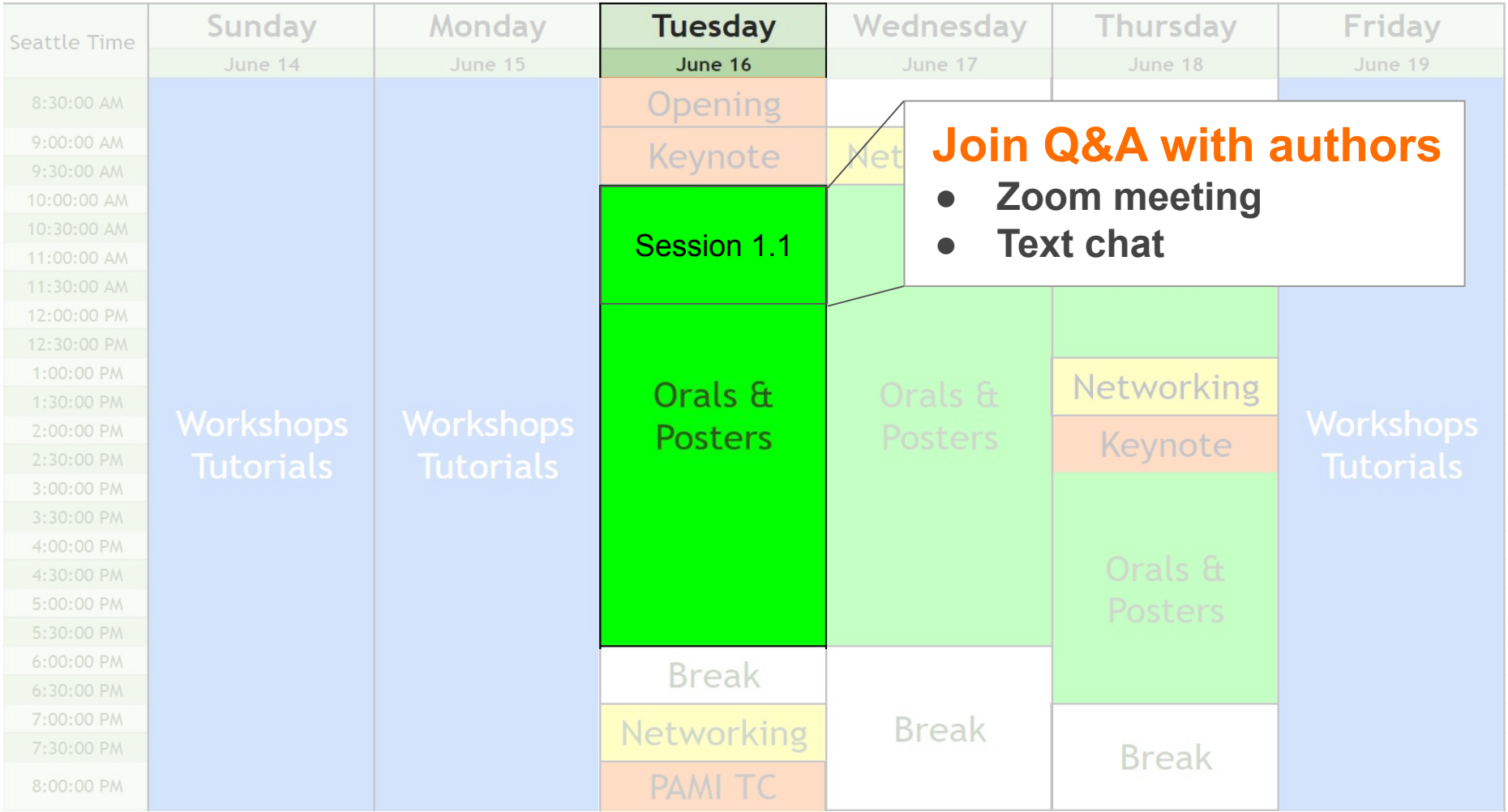
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Workshops Tutorials
Join Q&A with authors
Zoom meeting
Text chat

The “efficient” way

Watch videos ahead of time

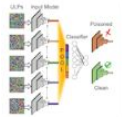
adversarial ...

Unpaired Image Super-Resolution Using Pseudo-Supervision:2nd Time

In this paper, I describe a GAN-based unpaired image super-resolution method that overcomes the drawbacks of conventional GAN-based approaches.

Authors: Shunta Maeda

Keywords: super-resolution, image restoration, generative adversarial networks, unpaired learning

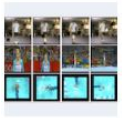


Universal Litmus Patterns: Revealing Backdoor Attacks in CNNs:2nd Time

We introduce Universal Litmus Patterns, which are optimized input images for which the outputs of a model reveal whether it is poisoned or clean.

Authors: Soheil Kolouri, Aniruddha Saha, Hamed Pirsiavash, Heiko Hoffmann

Keywords: Backdoor attacks, Poisoning attack, Backdoor Detection, Defense Mechanism, Adversarial Attacks, Universal Litmus Patterns

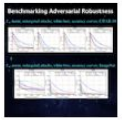


Robustness Guarantees for Deep Neural Networks on Videos:2nd Time

In this work, we guarantee the robustness of deep neural networks on videos and study the maximum safe radius problem, which computes the minimum dist

Authors: Min Wu, Marta Kwiatkowska

Keywords: Deep Neural Networks, Automated Verification, Adversarial Examples, Videos, Two-Player Game, Robustness, Lipschitz Continuity, Optical Flow



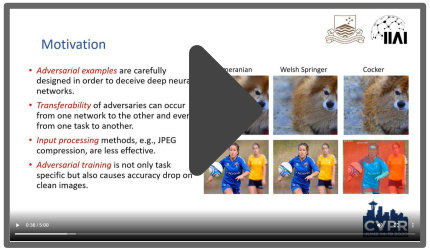
Benchmarking Adversarial Robustness on Image Classification:2nd Time

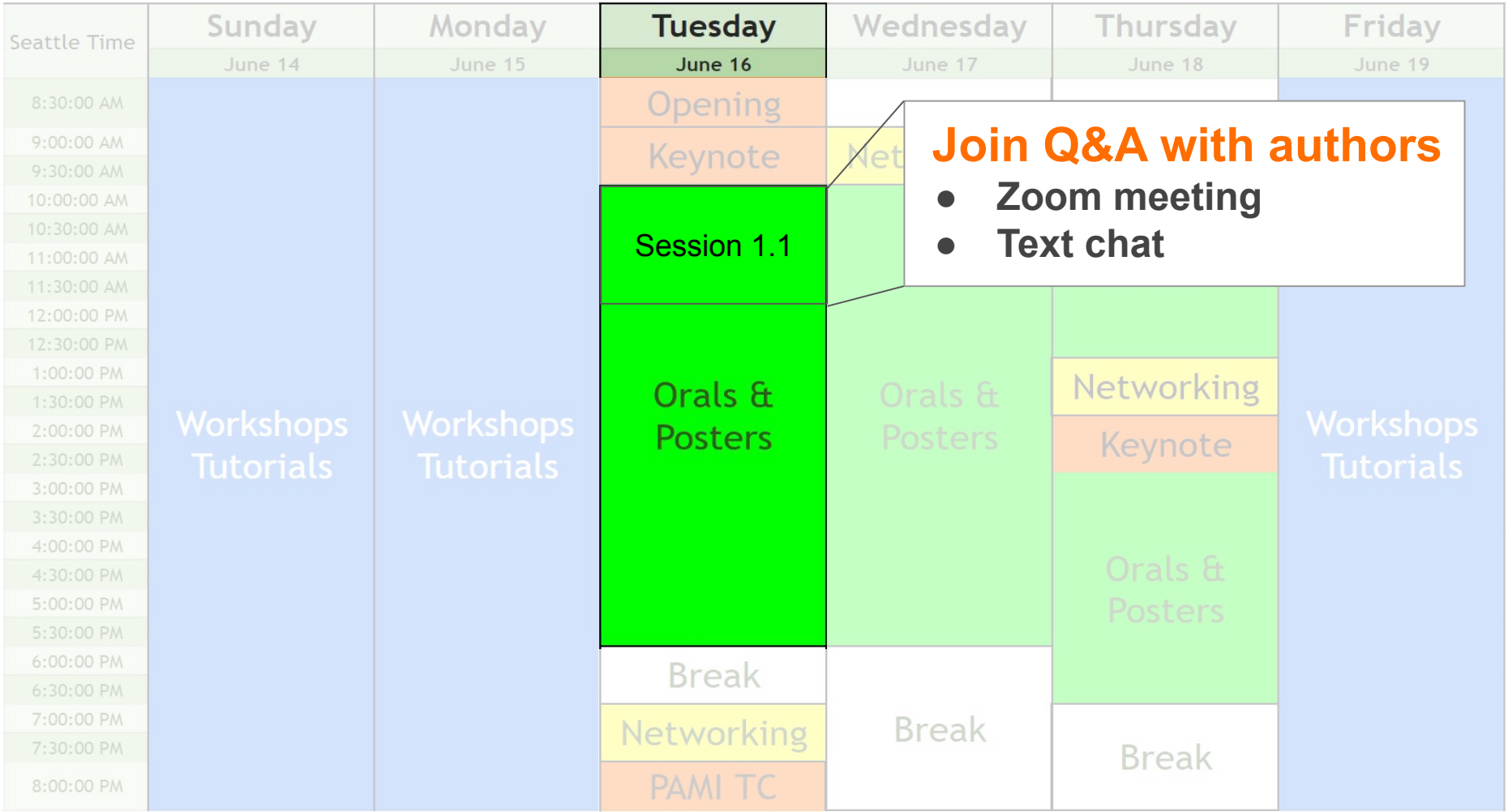
In this paper, we establish a comprehensive, rigorous, and coherent benchmark to evaluate adversarial robustness on image classification tasks.

Authors: Yinpeng Dong, Qi-An Fu, Xiao Yang, Tianyu Pang, Hang Su, Zihao Xiao, Jun Zhu

Keywords: adversarial robustness, benchmark, evaluation, security, attack, defense, image classification

A Self-supervised Approach for Adversarial..

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Zoom meeting
Text chat

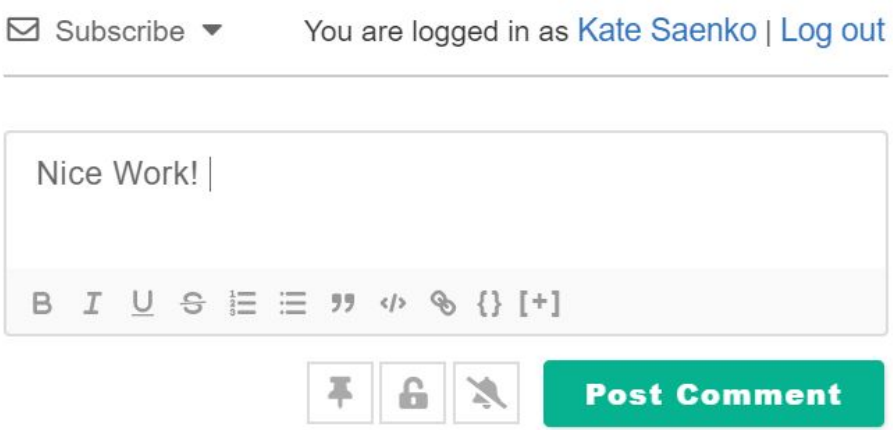
Live Q&A with authors

Be polite, turn on your video!

zoom

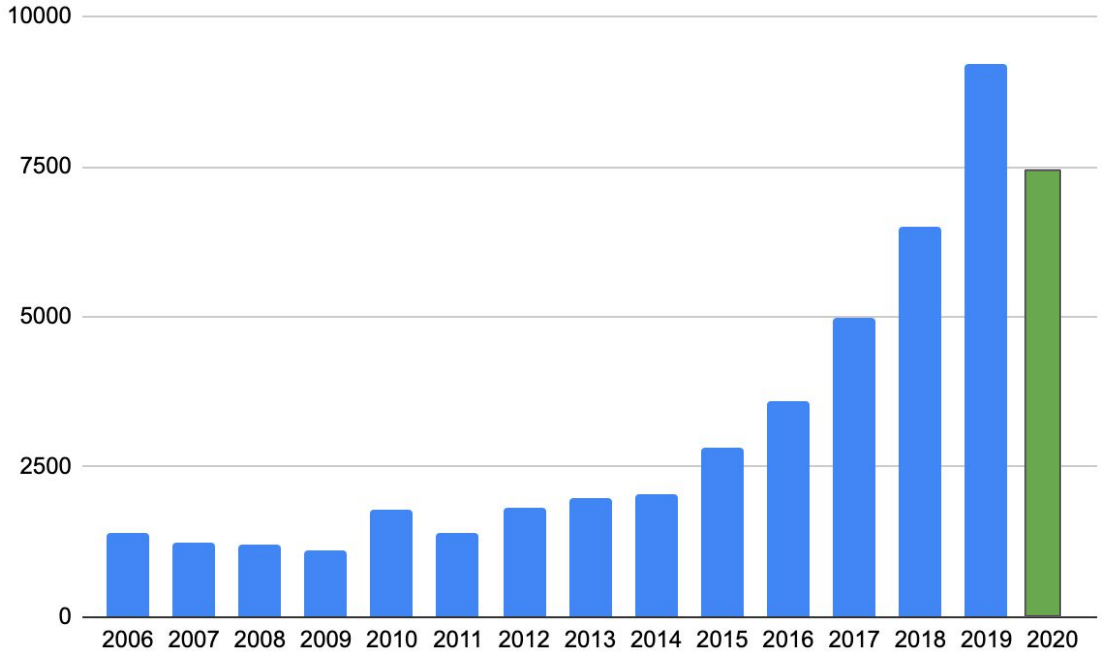
Follow conduct of conduct at all times!

http://cvpr2020.thecvf.com/attend/code-of-conduct



CVPR 2020 Stats

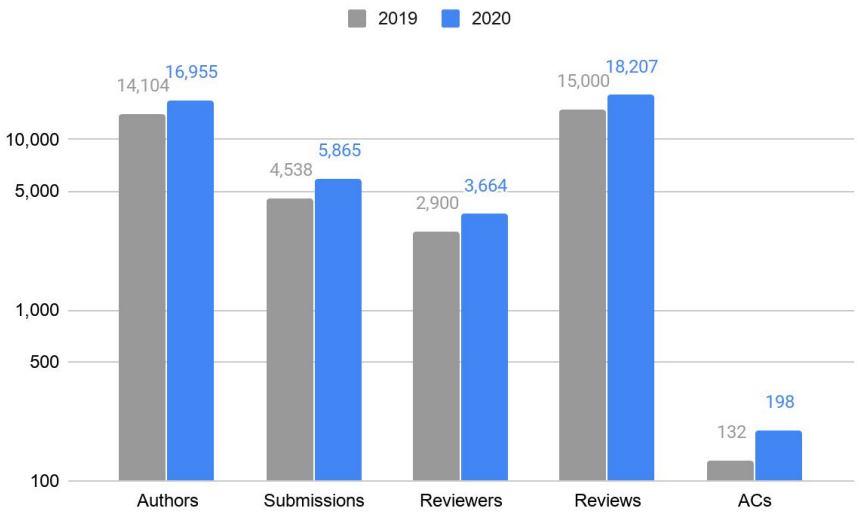
Attendees per year



Participants

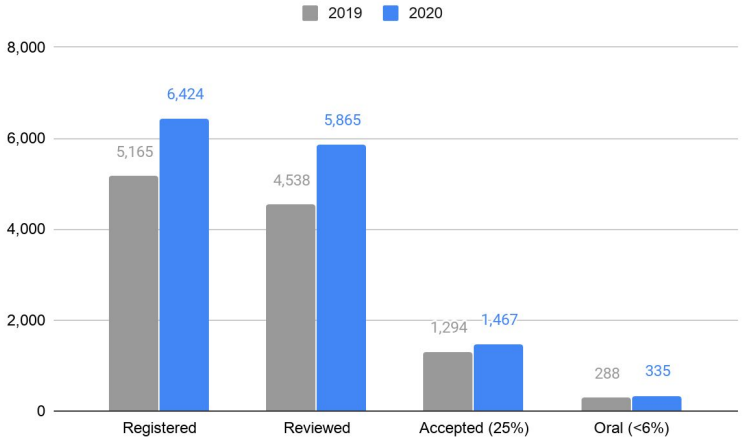
- **16,955 authors**
  - 20% increase
- **5,865 valid submissions**
  - 29% increase
- **3,664 reviewers**
  - 26% increase
  - **18,207 reviews**
    - 21% increase
  - 3+ reviews for each valid submission
  - **~5** papers per reviewer
- **198 ACs**
  - 50% increase
  - **~30** papers per AC
  - Each paper decision made by 3 ACs

2020 vs 2019 (log scale)

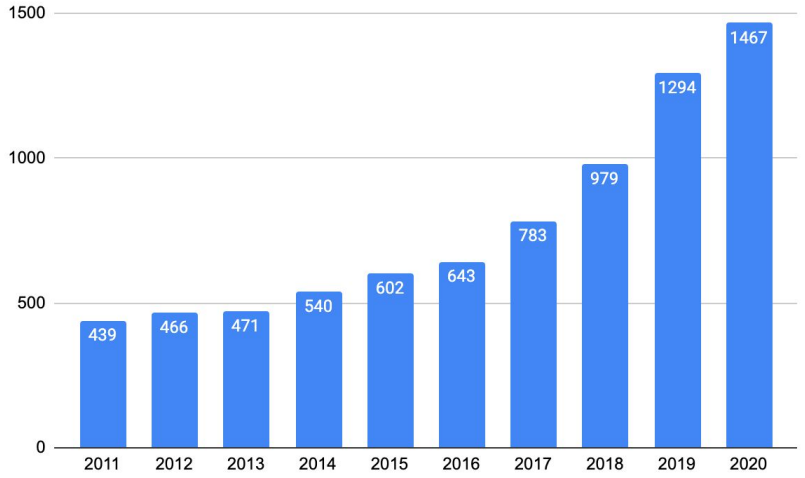


Posters/Orals

- **6,424 registered** (vs. 5,165 in 2019)
- **5,865 valid submissions** (vs. 4,538 in 2019)
- **1,467 accepted (25.0%)**
- **335 orals (5.7%)**



Accepted last 10 years



Posters/Orals

As before, papers were accepted as orals and posters purely based on the quality. There were no caps set in the paper decision process.

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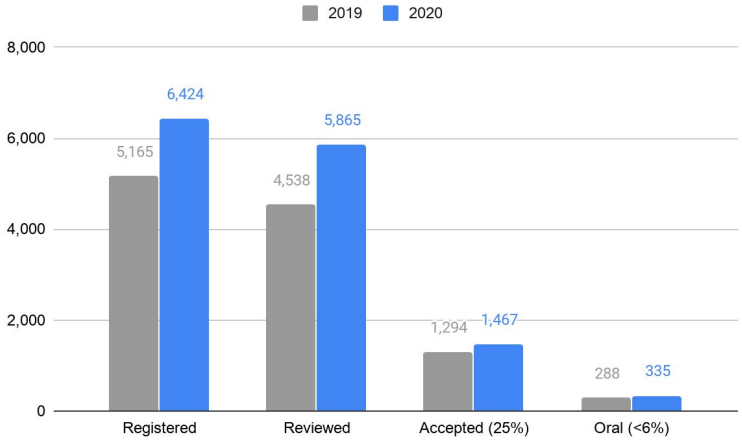

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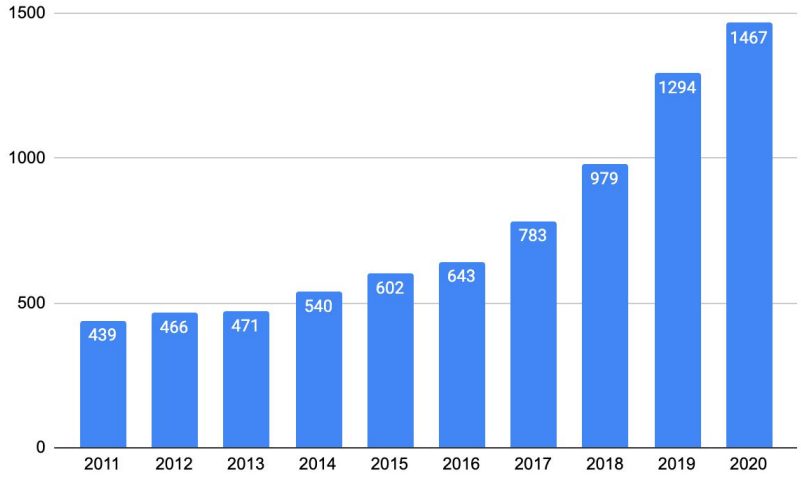

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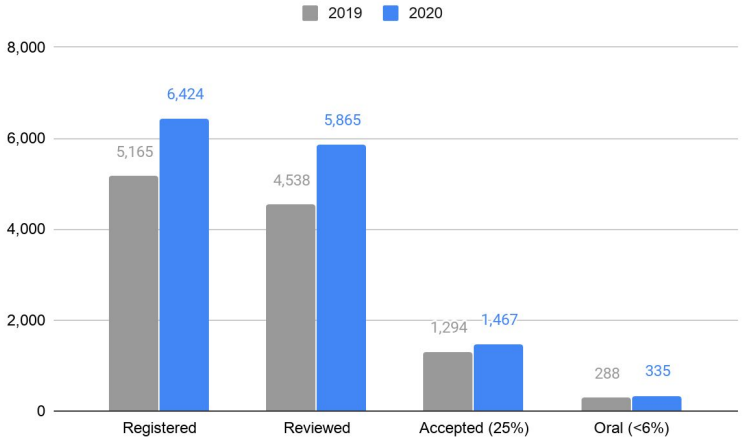
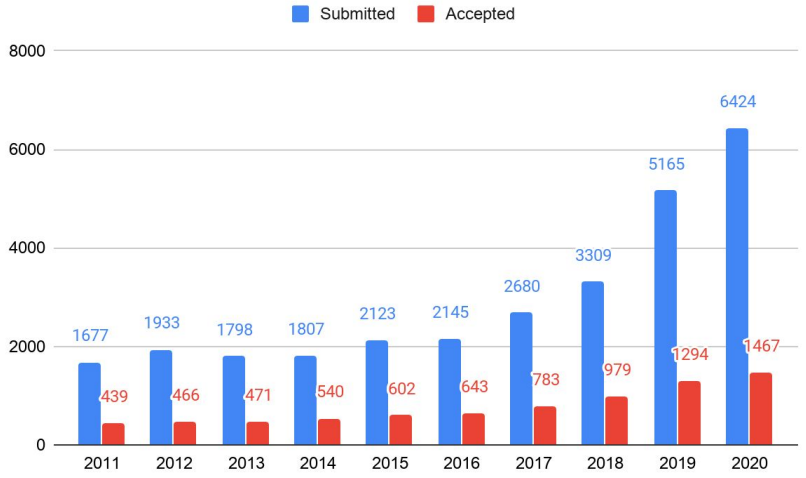
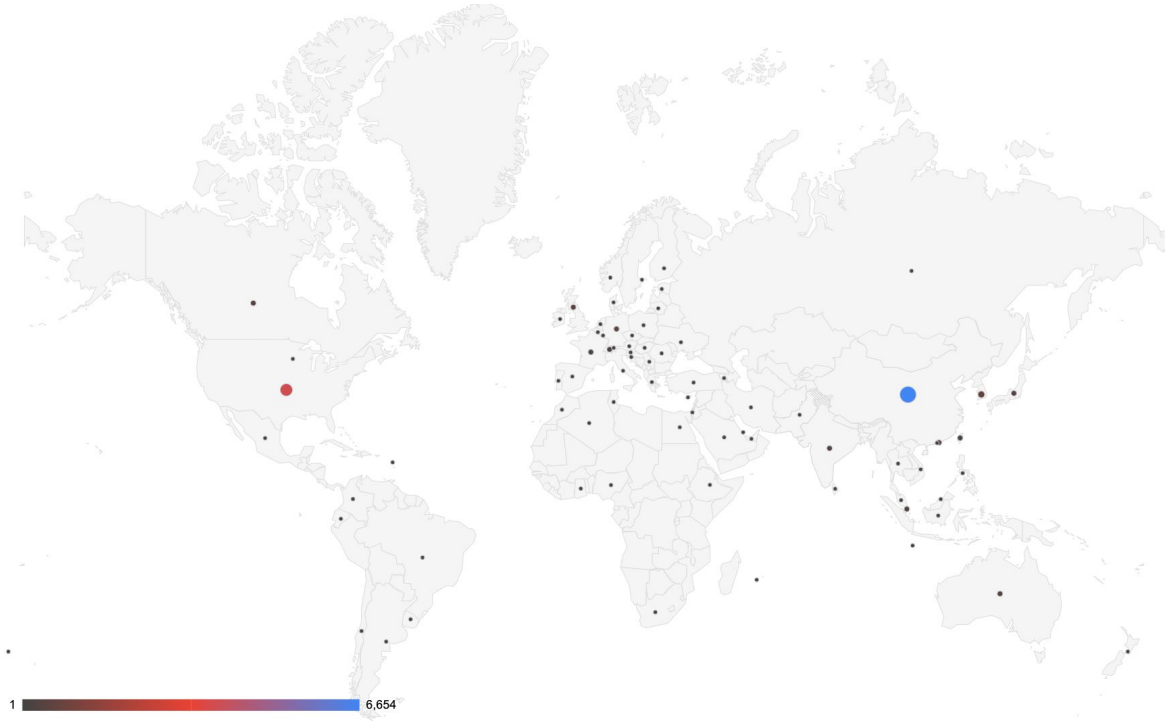


Registered vs accepted last 10 years

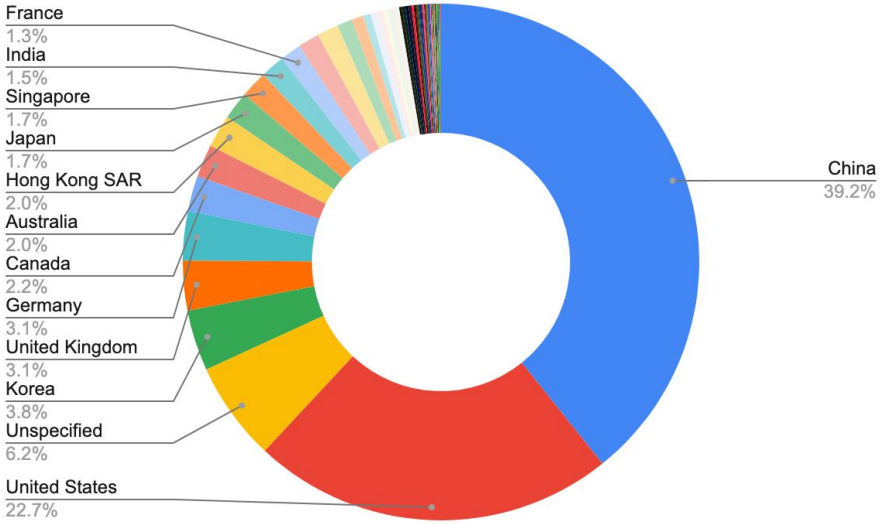


Author Distribution

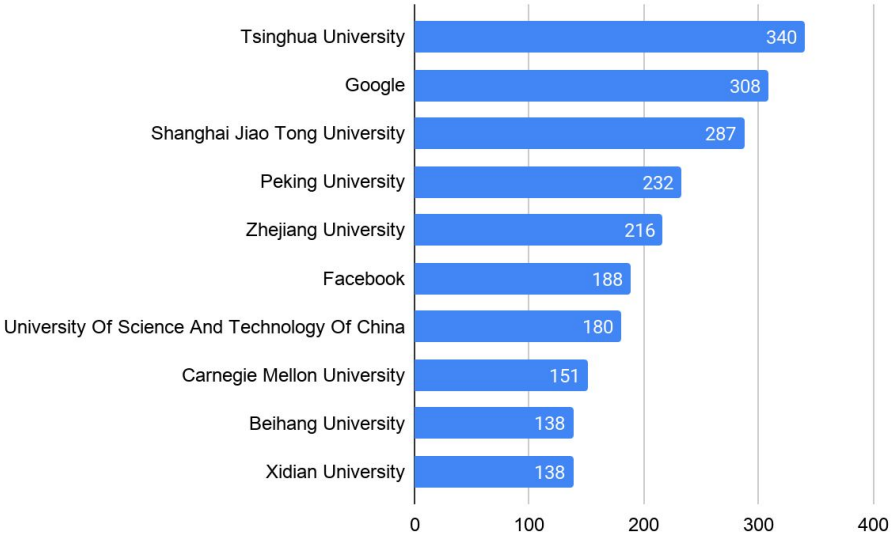


Author Distribution

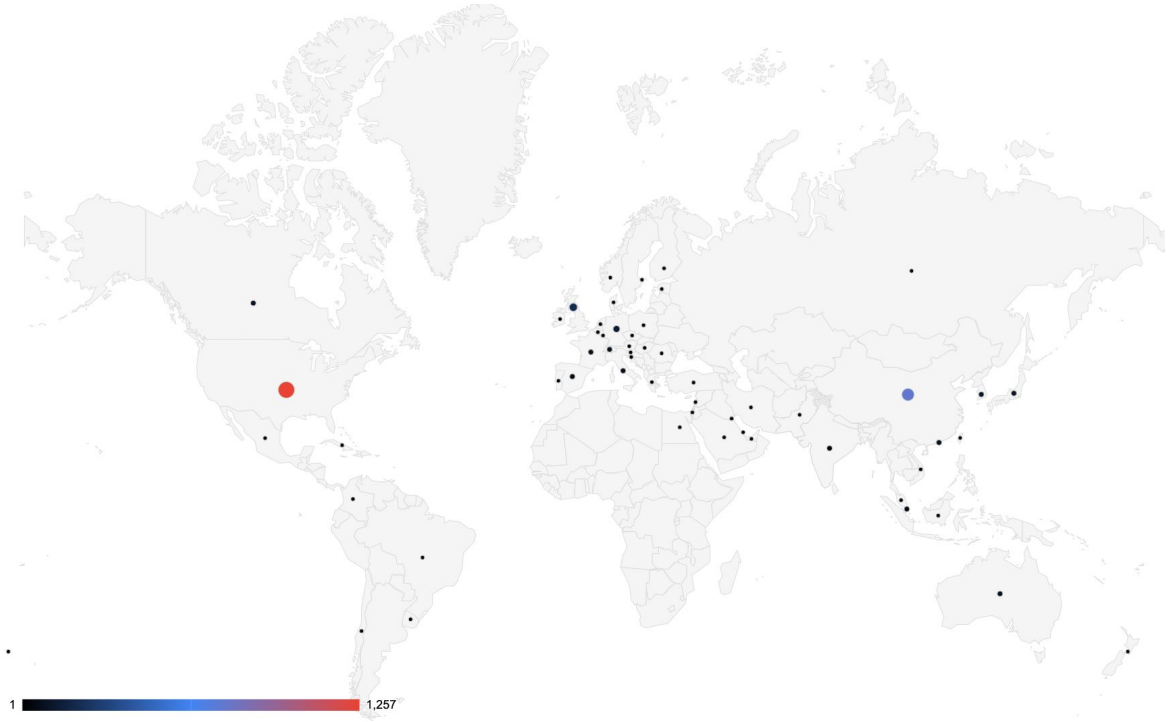
Authors by country/region



Authors by organization (top 10)

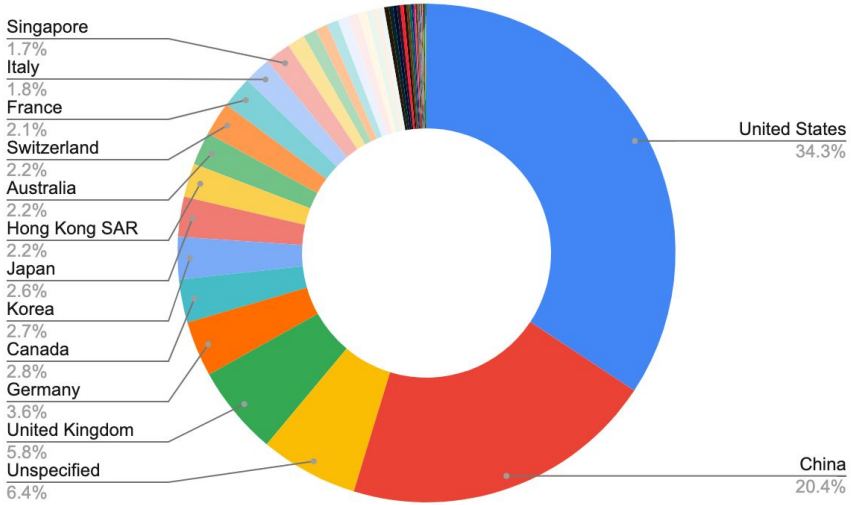


Reviewer Distribution

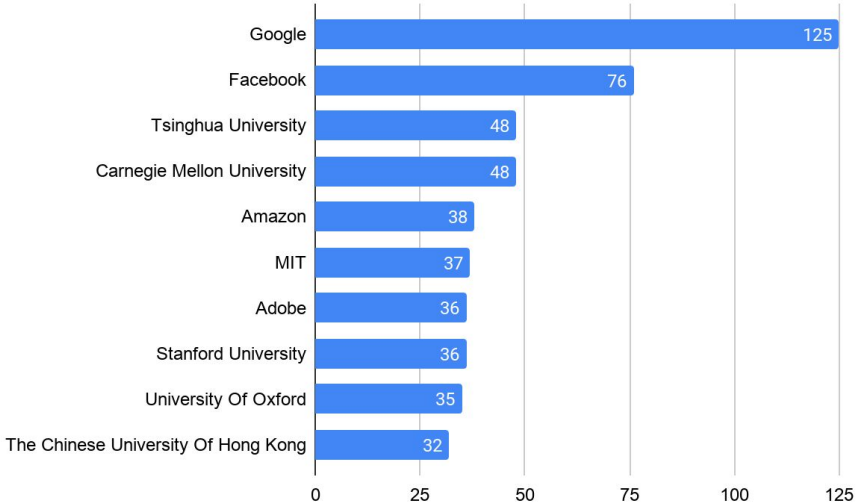


Reviewer Distribution

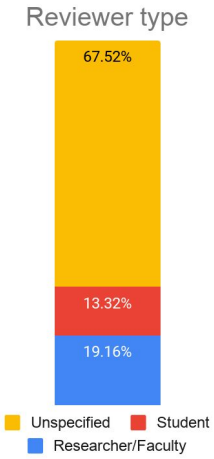
Reviewers by country/region

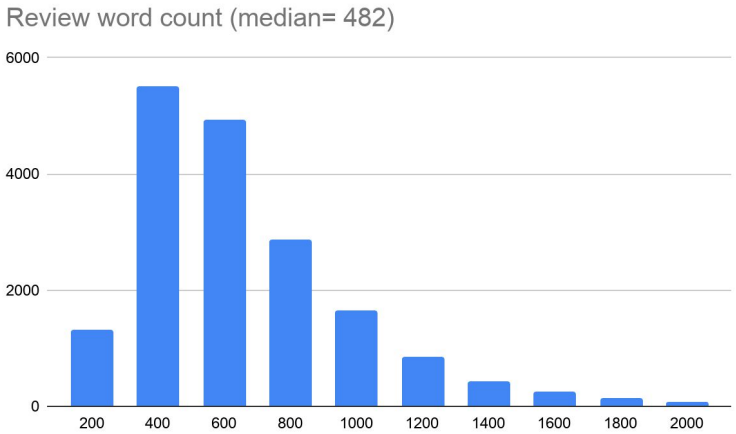


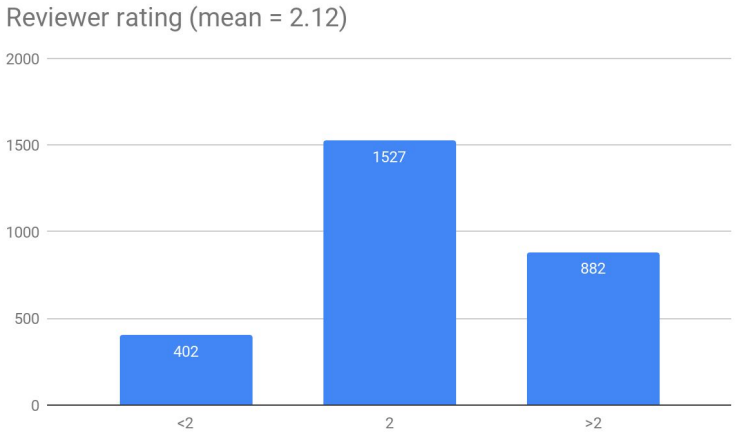
Reviewers by organization (top 10)



Review Distribution







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Adobe


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Ajay Kumar
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Aleix Martinez
The Ohio State University


Ales Leonardis
University of Birmingham


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Jianbo Shi
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Justin Johnson
Facebook AI Research

Kaiming He
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Inria

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Kavita Bala
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Serena Yeung
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Shai Avidan
Tel-Aviv University


Shang-Hong Lai
National Tsing Hua University


Shiguang Shan
Chinese Academy of Sciences


Shuran Song
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Si Liu
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Srinivasa Narasimhan
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NVIDIA

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Minsu Cho
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Nazli Ikizler-Cinbis
Hacettepe University

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UIUC

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Tatsuya Harada
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Timnit Gebru
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Max Planck Institute for Informatics

Zhe Lin
Adobe Research

Zhouchen Lin
Peking University

Zhuowen Tu
UC San Diego

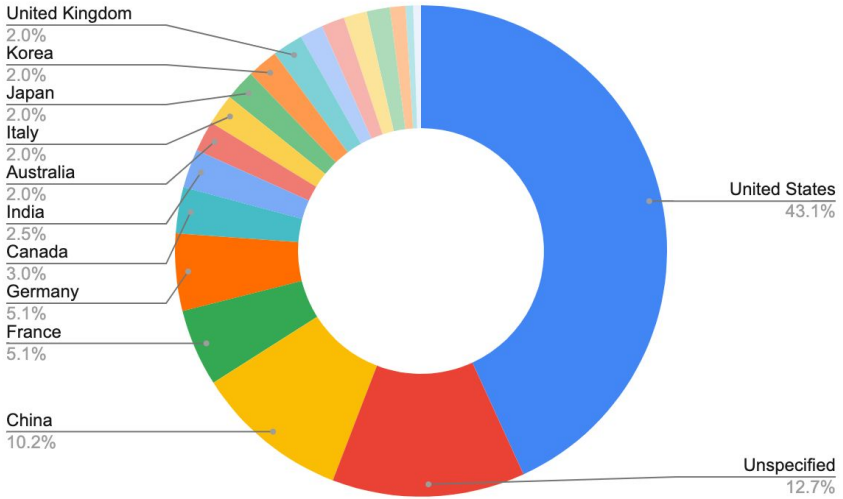
Zicheng Liao
Zhejiang University

Feng Yang
Google

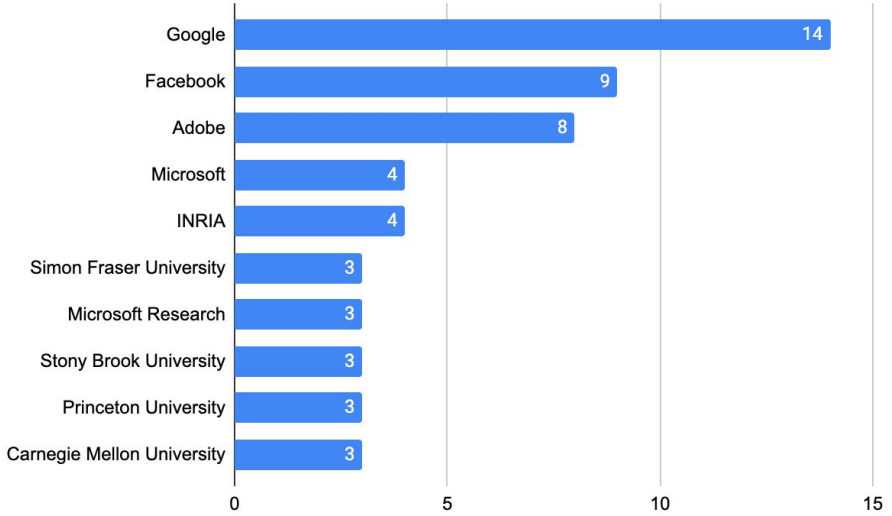
AC meeting at UCSD

AC Distribution

ACs by country/region



ACs by organization (top 10)



- 35 women
- Increasingly more ACs in Asia

Modernized Subject Areas

Main subject areas
Machine learning architectures and formulations
Explainable AI
Efficient training & inference methods
Generative models
Adversarial learning
Transfer/Low-shot/Semi/Unsupervised Learning
Recognition (detection, categorization)
Face, gesture, and body pose
Image and video synthesis
Segmentation, grouping & shape
Vision + language
3D from multiview and sensors
Low-level and physics-based vision
3D from single image and shape-from-x

Vision applications and systems
Datasets & evaluation
Optimization and learning methods
Video analysis and understanding
Biometrics
Vision for robotics or autonomous vehicles
Action recognition
Medical, biological and cell microscopy
Visual reasoning and logical representation
Image retrieval
Fairness, Accountability, Transparency and Ethics in Vision
Vision + other modalities
Motion & tracking
Representation learning
Computational photography
Scene analysis and understanding

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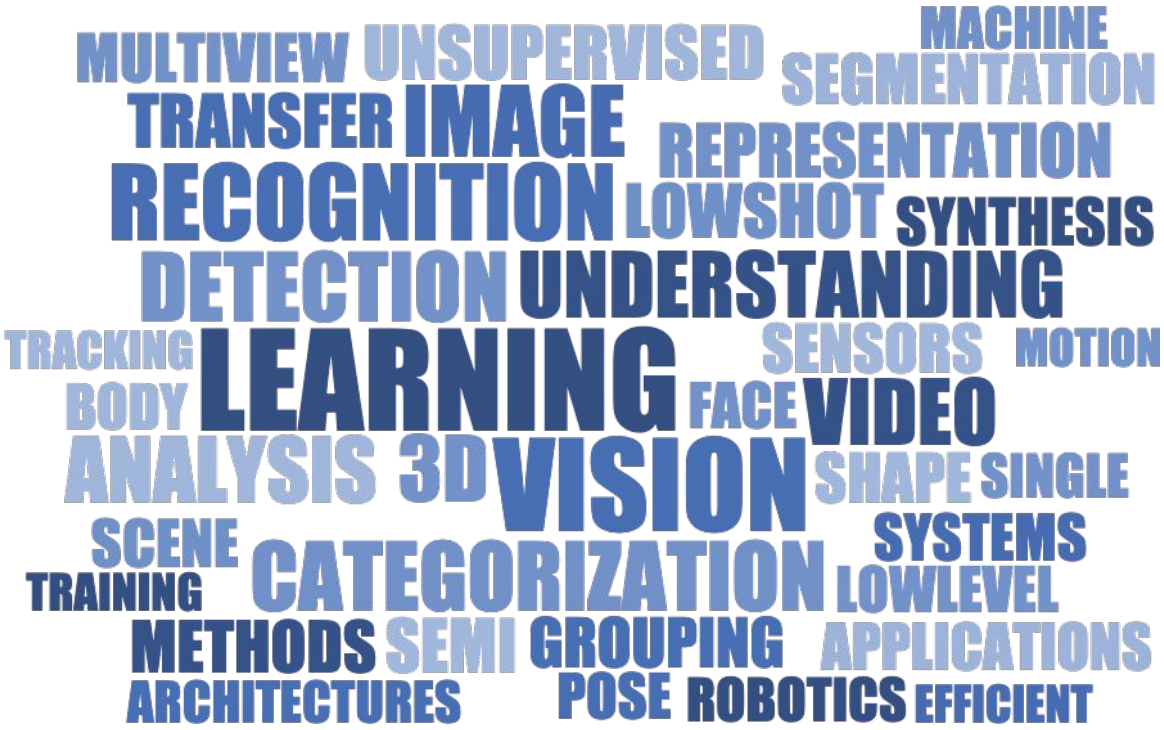
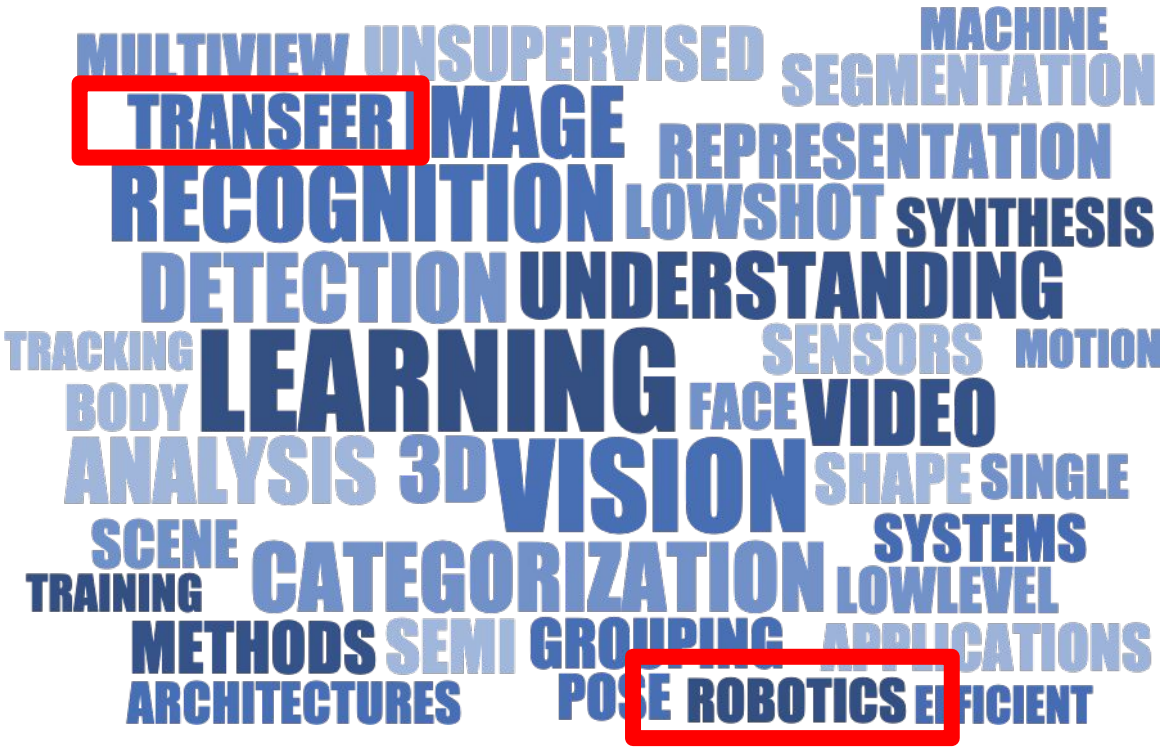
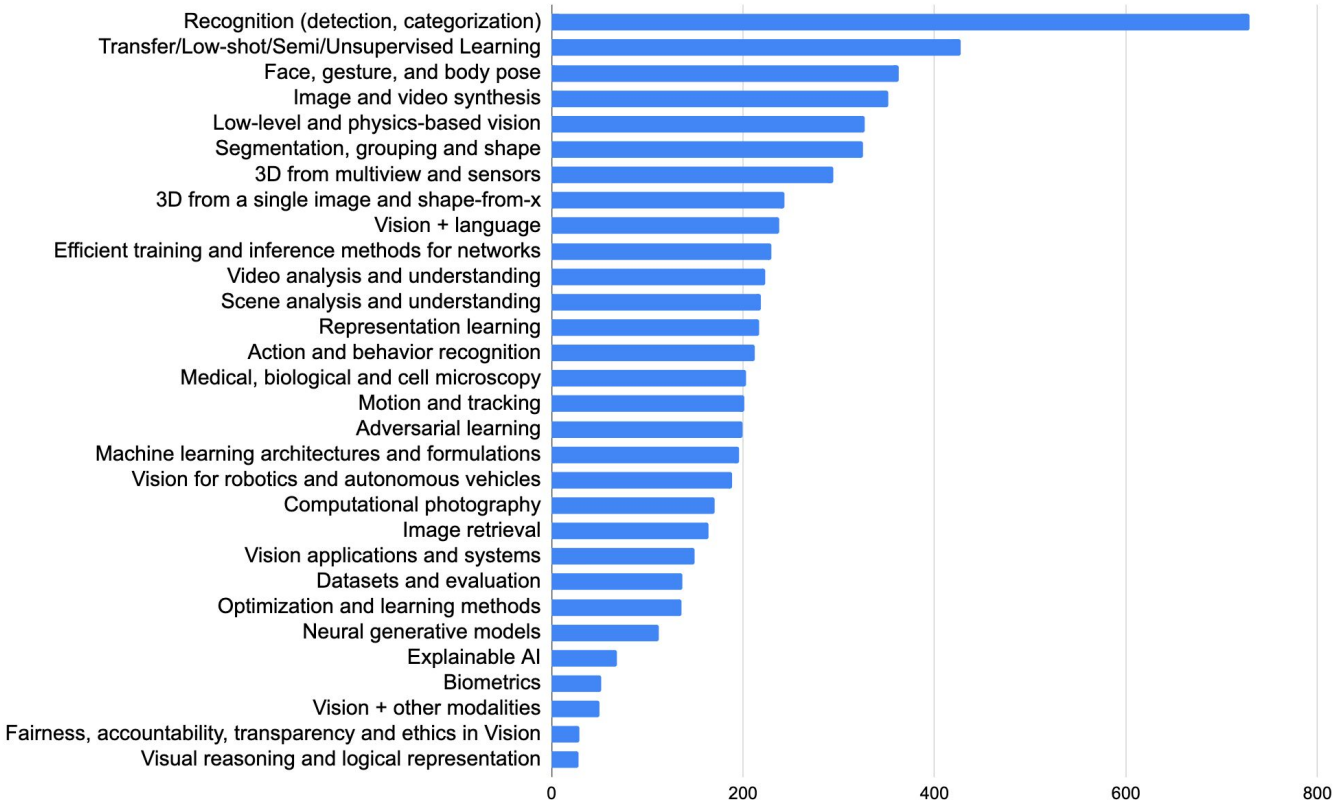
Popular Areas



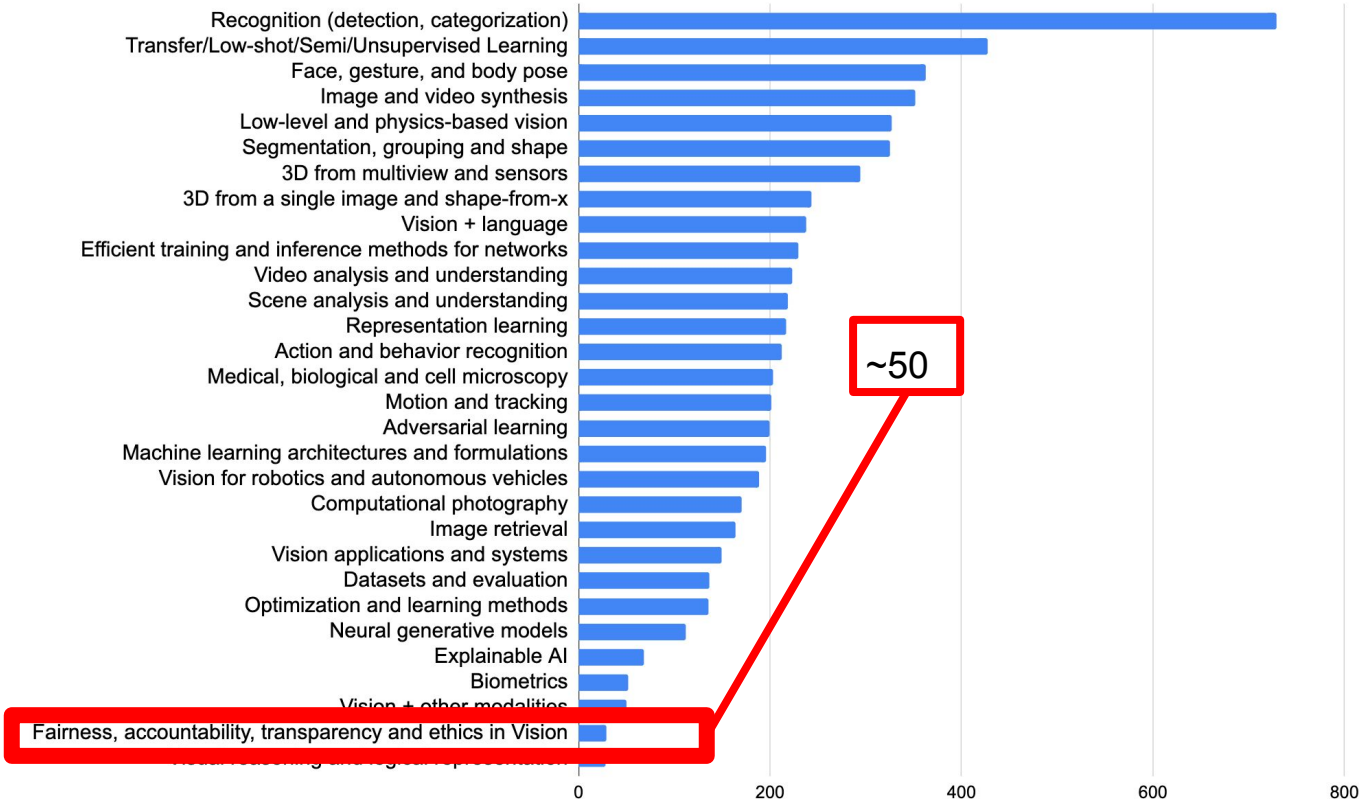
Popular Areas



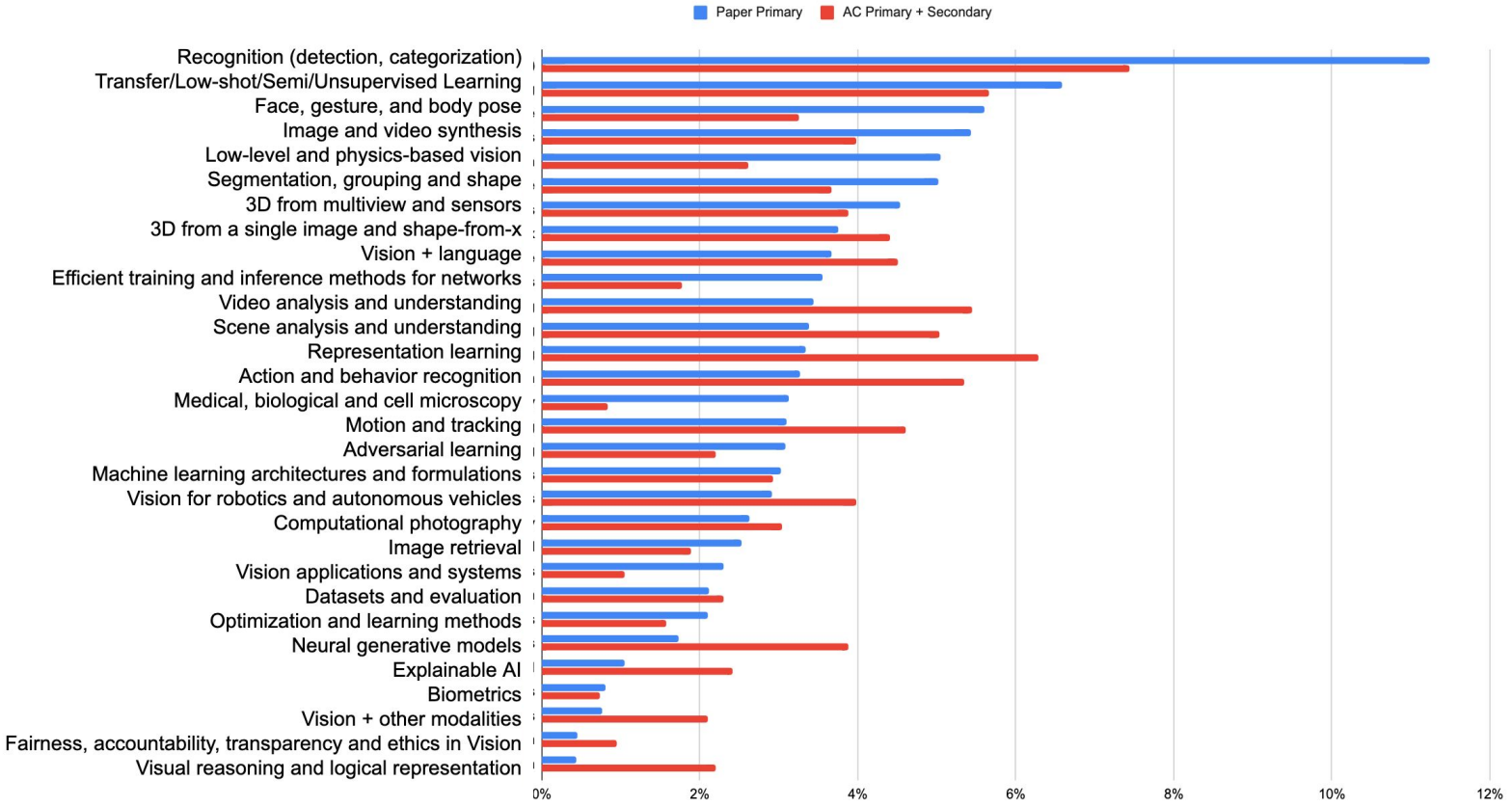
Distribution of subject Areas



Distribution of subject Areas



Subject areas vs AC expertise



Code submission!

- Opportunity for authors to voluntarily submit their code
- Out of all of submitted papers, 730 were coupled with code uploads.

CVPR 2020 Awards

Outstanding reviewers

Abhishek Kar
Adam Harrison
Aditya Deshpande
Adrian Dalca
Aggeliki Tsoli
Alexander Krull
Alexander Richard
Alexander Sax
Aljosa Osep
Ameesh Makadia
Ameya Prabhu
Andrei Bursuc
Andrew Zisserman
Angela Yao
Anirban Chakraborty
Antonino Furnari
Baoxiong Jia
Ben Usman
Biagio Brattoli
Brais Martínez
Bryan Plummer
Chong You
Chris Tensmeyer
Christoph Feichtenhofer
Connelly Barnes
Cusuh Ham
Dakai Jin
Daniel Ritchie
David Fleet
David Lindell
David Novotny
Diana Mateus
Dima Damen
Dimitrios Tzionas
Dongdong Chen
Dushyant Mehta
Eduard Trulls
Enrique Sanchez
Ferda Ofli
Ferran Diego
Filip Radenovic
Giorgos Tolias
Gregory Slabaugh
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Hang Su
Hang Zhou
Iacopo Masi
Ilias Theodorakopoulos
Jan van Gemert
Jean Kossaifi
Jean-Baptiste Alayrac
Jerome Revaud
Jesus Briales
Jie Shen
Jinshan Pan
Jochen Gast
Jogendra Nath Kundu
Jonathan Barron
Jonathon Luiten
Juan Perez
Junhwa Hur
Kaiyu Yang
Kenneth Marino
Kevis-Kokitsi Maninis
Koichi Ito
Konstantinos Vougioukas
Kuniaki Saito
Kuo Wang
Kushal Kafle
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Martin Urschler
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Matthieu Cord
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Mohammad S. Aliakbarian
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Moshiur Farazi
Nannan Wang
Nanne van Noord
Nikos Kolotouros
Ning Wang
Ohad Fried
Ozan Sener
Pan Zhou
Patrick Knöbelreiter
Paul Voigtlaender
Qijun Zhao
Rafal Mantiuk
Raghudeep Gadde
Ramazan Gokberk Cinbis
Renaud Marlet
Rodrigo de Bem
Roman Shapovalov
Ronald Clark
Ronghang Hu
Ruohan Gao
Saining Xie
Samuel Albanie
Samuele Salti
Sanghyuk Chun
Saquib Sarfraz
Sathyanarayanan Aakur
Scott Workman
Senthil Purushwalkam
Shyamal Buch
Simon Niklaus
Slawomir Bak
Soravit Changpinyo
Stefan Lee
Steven McDonagh
Tae-Hyun Oh
Tatsunori Taniai
Thibaut Durand
Tianye Li
Tolga Birdal
Tom Runia
Torsten Sattler
Tushar Nagarajan
Umar Iqbal
Varun Manjunatha
Victor Fragoso
Vladimir Pavlovic
Wolfgang Foerstner
Xavier Giro-i-Nieto
Xide Xia
Xingchao
Yagiz Aksoy
Yang Zhao
Yazan Abu Farha
Yibing Song
Yu-Wei Chao
Yuxing Tang
Zheng Wu
Zhicheng Yan
Zhouhui Lian
Zhuang Liu
Zhun Zhong

CVPR 2020 Best Paper Award Committee

- Cordelia Schmid
- David Fleet
- Antonio Torralba
- Yair Weiss
- Jian Sun
- Kristin Dana (chair)

Paper award nominees

Weakly-supervised Domain Adaptation via GAN and Mesh Model for Estimating 3D Hand Poses Interacting Objects
Seungryul Baek; Kwang In Kim; Tae-Kyun Kim

Unsupervised Learning of Probably Symmetric Deformable 3D Objects from Images in the Wild
Shangzhe Wu; Christian Rupprecht; Andrea Vedaldi

Bridging the Gap Between Anchor-based and Anchor-free Detection via Adaptive Training Sample Selection
Shifeng Zhang; Cheng Chi; Yongqiang Yao; Zhen Lei; Stan Li

Momentum Contrast for Unsupervised Visual Representation Learning
Kaiming He; Haoqi Fan; Yuxin Wu; Saining Xie; Ross Girshick

BSP-Net: Generating Compact Meshes via Binary Space Partitioning
Zhiqin Chen; Andrea Tagliasacchi; Hao Zhang

Disentangled image generation through structured noise injection
Yazeed Alharbi; Peter Wonka

UC-Net: Uncertainty Inspired RGB-D Saliency Detection via Conditional Variational Autoencoders
Jing Zhang; Deng-Ping Fan; Yuchao Dai; Saeed Anwar; Fatemeh Sadat Saleh; Tong Zhang; Nick Barnes

TextureFusion: High-Quality Texture Acquisition for Real-Time RGB-D Scanning
Joo Ho Lee; Hyunho Ha; Yue Dong; Xin Tong; Min H. Kim

Controllable Orthogonalization in Training DNNs
Lei Huang; Li Liu; Fan Zhu; Diwen Wan; Zehuan Yuan; Bo Li; Ling Shao

DeepCap: Monocular Human Performance Capture Using Weak Supervision
Marc Habermann; Weipeng Xu; Michael Zollhöfer; Gerard Pons-Moll; Christian Theobalt

Total3DUnderstanding: Joint Layout, Object Pose and Mesh Reconstruction for Indoor Scenes from a Single Image
Yinyu Nie; Xiaoguang Han; Shihui Guo; Yujian Zheng; Jian Chang; Jian.J Zhang

Transferring Cross-domain Knowledge for Video Sign Language Recognition
Dongxu Li; Xin Yu; Chenchen Xu; Lars Petersson; Hongdong Li

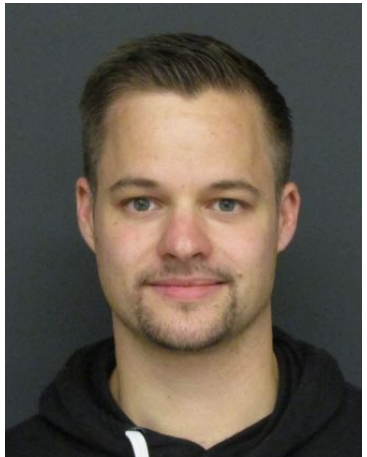
Computing the Testing Error without a Testing Set
Ciprian Corneanu; Aleix Martinez; Sergio Escalera
Visual Chirality
Zhiqiu Lin; Abe Davis; Jin Sun; Noah Snavely
CvxNet: Learnable Convex Decomposition
Boyang Deng; Kyle Genova; Soroosh Yazdani; Sofien Bouaziz; Geoffrey Hinton; Andrea Tagliasacchi
The Secret Revealer: Generative Model-Inversion Attacks Against Deep Neural Networks
Yuheng Zhang; Ruoxi Jia; Hengzhi Pei; Wenxiao Wang; Bo Li; Dawn Song
Optimizing Rank-based Metrics with Blackbox Differentiation
Michal Rolinek; Vit Musil; Anselm Paulus; Marin Vlastelica Pogančić; Claudio Michaelis; Georg Martius
High-Performance Long-Term Tracking with Meta-Updater
Kenan Dai; Yunhua Zhang; Dong Wang; Jianhua Li; Huchuan Lu; Xiaoyun Yang
Deep Iterative Surface Normal Estimation
Jan Lenssen; Christian Osendorfer; Jonathan Masci
Predicting Goal-directed Human Attention Using Inverse Reinforcement Learning
Zhibo Yang; Lihan Huang; Yupei Chen; Zijun Wei; Seoyoung Ahn; Gregory Zelinsky; Dimitris Samaras; Minh Hoai Nguyen
Classifying, Segmenting, and Tracking Object Instances in Video with Mask Propagation
Gedas Bertasius; Lorenzo Torresani
Robust Learning Through Cross-Task Consistency
Amir Zamir; Alexander Sax; Jitendra Malik; Nikhil Cheerla; Rohan Suri; Zhangjie Cao; Leonidas Guibas
Deep Geometric Functional Maps: RobustFeature Learning for Shape Correspondence
Nicolas Donati; Abhishek Sharma; Maks Ovsjanikov
Weakly-Supervised Mesh-Convolutional Hand Reconstruction in the Wild
Dominik Kulon; Alp Guler; Iasonas Kokkinos; Michael Bronstein; Stefanos Zafeiriou
Cross-Batch Memory for Embedding Learning
Xun Wang; Haozhi Zhang; Weilin Huang; Matthew Scott
Correction Filter for Single Image Super-Resolution: Robustifying Off-the-Shelf Deep Super-Resolvers
Shady Abu Hussein; Tom Tirer; Raja Giryes

Best Student Paper Honorable Mention

DeepCap: Monocular Human Performance Capture Using Weak Supervision

Marc Habermann (Max Planck Institute for Informatics)*; Weipeng Xu (MPII); Michael Zollhöfer (Facebook Reality Labs); Gerard Pons-Moll (MPII, Germany); Christian Theobalt (MPI Informatik)

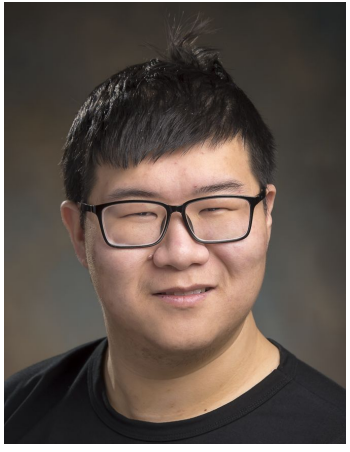



Best Student Paper Award

BSP-Net: Generating Compact Meshes via Binary Space Partitioning

Zhiqin Chen (Simon Fraser University); Andrea Tagliasacchi (Google Inc.); Hao Zhang (Simon Fraser University)



Best Paper Award

Unsupervised Learning of Probably Symmetric Deformable 3D Objects from Images in the Wild

Shangzhe Wu (University of Oxford)*; Christian Rupprecht (University of Oxford); Andrea Vedaldi (Oxford University)

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