

# Vivek Sharma

## Curriculum Vitae

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## Employment

- 2023 - Now **SONY** **Lead Computer Vision Privacy (CV Privacy) under PPML Group.**  
Sony AI, Sony Research. Position: Researcher and Manager at Sony.
- 2020 - 2022 **MIT** **Distributed ML w/wo Privacy Concerns & AI for COVID-19 Research.**  
Camera Culture Group, MIT Media Lab. Position: Postdoc. & Research Scientist. Advisor: Prof. Ramesh Raskar, Mentor: Prof. Alex 'Sandy' Pentland. <http://cameraculture.media.mit.edu/>
- 2019 - 2022 **HARVARD MEDICAL SCHOOL** **Clinical and Translational Imaging.**  
Division of Neuroradiology, Department of Radiology, Massachusetts General Hospital (MGH). Harvard Medical School (HMS). Position: Non-Employee Ph.D. Student & Research Scientist. Employer: Dr. Rajiv Gupta. <https://scholar.harvard.edu/vsharma>
- 2019 - 2021 **Harvard Medical School** **Disease Outbreak Prediction in India.**  
Machine Intelligence Lab at Boston Children Hospital, Harvard Medical School (HMS), Harvard University. Position: Research Affiliate. Faculty Host: Prof. Mauricio Santillana. <https://scholar.harvard.edu/msantillana>
- 2020 - 2022 **KIT** **Unsupervised Image & Video Representation Learning.**  
Institute for Anthropomatics and Robotics, CV:HCI Lab, Karlsruhe Institute of Technology (KIT). Position: Postdoc and Researcher with Prof. Dr. Rainer Stiefelhagen and Dr. Saquib Sarfraz.
- 2020 **LF33 NAVER LABS EUROPE** **Large-Scale Fashion Clothes Recognition.**  
NAVER Labs, Grenoble. Position: Visiting Researcher. Employer: Naila Murray, Gabriela Csurka and Diane Larlus.
- 2018 **Limsi** **Multimodal (Audio, Visual and Text) Representation Learning & Retrieval.**  
University of Paris-Sud and LIMSI. Position: Visiting Researcher. Employer: Prof. Claude Barras, Asst. Prof. Camille Guinaudeau, Dr. Herve Bredin.
- 2015 - 2017 **KU LEUVEN** **Hyperspectral Image Classification.**  
Department of Electrical Engineering (ESAT) - Center for Processing Speech and Images (PSI), **KU Leuven**. Position: Research Assistant. Employer: Prof. Luc Van Gool, KU Leuven/ETH Zürich
- 2011 - 2022 **Fraunhofer** **Visualization of Multispectral Data for Food Sorting.**  
Visual Inspection Systems (SPR), **Fraunhofer IOSB**. Position: Research Associate. Employer: Prof. Dr. -Ing. Thomas Längle, Head of the Research Group.
- 2011 - 2022 **KIT** **Augmented Vision for Humanoid Robot ARMAR-III.**  
Institute of Process Control, Automation & Robotics, Karlsruhe Institute of Technology (KIT). Position: Guest Researcher. Employer: Prof. Dr. -Ing. Heinz Wörn, Dean of Computer Science.







## Education

- 03/17-5/20 **KIT** **Ph.D. in Computer Science (Dr.-Ing.) with Grade: 1.0/1.0 (awarded with distinction), Ph.D. Student and Research Assistant at Computer Vision for HCI, KARLSRUHE INSTITUTE OF TECHNOLOGY. Researcher/Student at MIT Media Lab, MASSACHUSETTS INSTITUTE OF TECHNOLOGY. Non-Employee Ph.D. Student at Dept. of Radiology, MGH, HARVARD MEDICAL SCHOOL, Thesis: Self-supervised Face Representation Learning.**

- 09/12-06/14  **Color in Informatics and Media Technology (CIMET): Master of Science (M.Sc.),** I-Sem: University Jean Monnet, FRANCE. M.Sc. in "Optics, Image, Vision". II-Sem: University of Granada, SPAIN. M.Sc. in "Informatics & Media Technology". III-Sem: Norwegian University of Science and Technology, NORWAY. M.Sc. in "Applied Computer Science". IV-Sem: Karlsruhe Institute of Technology, GERMANY. "Master Thesis". CGPA - 7.8/10 with Distinction Marks (Honours), ECTS - 120.
- 08/07-07/11  **Computer Science & Engineering: Bachelor of Technology (B.Tech.),** B.K. Birla Institute of Engineering and Technology (BKBIET), INDIA. CGPA - 7.73/10 with First Division.

## Academic Thesis & Project

### Master

- 01/14-06/14  **Thesis: Training and Evaluation of a Framework for Pixel-wise Object Class Segmentation based on Synthetic Depth Data, Project (KIT): AMIKA.** Karlsruhe Institute of Technology (KIT), Norwegian University of Science and Technology (NTNU), University of Oslo (UiO) and Oslo University Hospital HF. Supervisor: Prof. Dr. -Ing. Heinz Wörn (KIT) and Assoc. Prof. Dr. Şule Yildirim Yayilgan (NTNU) and Assoc. Prof. Dr. Ole Jakob Elle (UiO & Oslo University Hospital HF).
- 11/13-12/13  **Project: Hyperspectral Imaging Workflow & Encoding Standards, *Link-to-PDF*.** Norwegian Colour and Visual Computing Laboratory, and NTNU. Position: Student Research Assistant. Supervisor: Prof. Jon Yngve Hardeberg
- 8/13-12/13  **Industrial Project: Waste sorting by Intelligent Machine Vision, *Link-to-PDF*.** University of Eastern Finland (UEF), Norwegian University of Science and Technology (NTNU), and ZenRobotics (Finland). Supervisor: Prof. Markku Hauta-Kasari & Prof. Jon Yngve Hardeberg.
- 8/13-11/13  **Project: Scene Understanding using Conditional Random Fields for Safe Human Robot Collaboration, *Link-to-PDF*.** Norwegian Colour and Visual Computing Laboratory, UiO, and NTNU. Position: Student Research Assistant. Supervisor: Prof. Dr. Faouzi Alaya Cheikh
- 6/13-8/13  **Internship: Material identification in different weather conditions for unsupervised traffic control systems, *Link-to-PDF*.** Color Imaging Lab, University of Granada (UGR), and Tecnalia Robotiker (Bilbao, Spain). Supervisor: Prof. Eva M. Valero (UGR).
- 2/13-6/13  **Project: 3D cloud maps, *Link-to-PDF*.** Andalusian Center for Environmental Research (CEAMA), University of Granada (UGR), NASA AERONET (AERosol Robotic NETwork). Position: Student Research Assistant. Supervisor: Prof. Lucas Alados Arboledas, Head of the Atmospheric Physics Institute.

### Bachelor

- 01/11-06/11  **Thesis: Gesture Recognition & Reproduction.** B.K. Birla Institute of Engineering and Technology. Supervisor: Assoc. Prof. Lovendra Solanki, Dean of Electrical & Electronics Engineering Department.

## Achievements



2020

**MIT News.**

Safe Paths: A privacy-first approach to contact tracing. <https://news.mit.edu/2020/safe-paths-privacy-first-approach-contact-tracing-0410>

2020

**Awarded Ph.D. with highest distinction: Summa Cum Laude.**

2019

**ICCV Student Award.**

2019 **Best Paper Award @ FG'19.**

Vivek Sharma, Makarand Tapaswi, M. Saquib Sarfraz, and Rainer Stiefelhagen. Self-Supervised Learning of Face Representations for Video Face Clustering. In *IEEE Automatic Face and Gesture Recognition (FG)*. <https://web.archive.org/web/20210513143444/http://fg2019.org/awards/>



**Karlsruhe House of Young Scientist (KHYS) Scholarship.**

Awarded an amount of 7,250 Euros for my visit to Massachusetts Institute of Technology.

2018 **CVPR Student Volunteering Award.**

2017 **ICCV Student Volunteering Award (declined).**

2013 **Appreciation.**

Overall topper of the 1st semester for the Master courses taken at the University of Jean Monnet.

2012 **European Commission Scholarship.**



Awarded an amount of 48,000 Euros for my Master program, selected among 500 candidates.

2011 **Appreciation.**

Among the top 10% out of 65 students graduated B.Tech in Computer Science, BKBIET.

**Grants**

10/19-10/20 **Research contract (coPI), NAVER Labs Europe.**

## Publication

All publications are peer-reviewed conference or journal publications and top tier in the respective field (computer vision, machine learning, robotics, intelligent vehicles). ICML, NeurIPs, ICCV, ECCV, FG and CVPR are highly competitive with acceptance rates of less than 30%. CVPR is the most highly cited IEEE conference with the highest impact in Engineering and Computer Science. CVPR, NeurIPs, ECCV, ICML, FG and ICCV are the most impactful conferences in computer science (<http://www.guide2research.com/topconf/>).

### – Journals/Articles



2022 Chris Clifton, Bradley Malin, Anna Oganian, Ramesh Raskar, **Vivek Sharma**. **A Roadmap for Greater Public Use of Privacy-Sensitive Government Data.** *Arxiv pre-print*. The workshop was supported by the National Science Foundation (NSF) and National Institute of Standards and Technologies (NIST), and the White House Office of Science and Technology Policy.

2020 Ramesh Raskar, Isabel Schunemann, Rachel Barbar, Kristen Vilcans, Jim Gray, Praneeth Vepakomma, Suraj Kapa, Andrea Nuzzo, Rajiv Gupta, Alex Berke, Dazza Greenwood, Christian Keegan, Shriank Kanaparti, Robson Beaudry, David Stansbury, Beatriz Botero Arcila, Rishank Kanaparti, Vitor Pamplona, Francesco M Benedetti, Alina Clough, Riddhiman Das, Kaushal Jain, Khahlil Louisy, Greg Nadeau, Steve Penrod, Yasaman Rajaei, Abhishek Singh, Greg Storm, John Werner, Ayush Chopra, Gauri Gupta, **Vivek Sharma**. **Apps gone rogue: Maintaining personal privacy in an epidemic.** *Arxiv pre-print*.

2019 **Vivek Sharma**, Makarand Tapaswi, M. Saquib Sarfraz, and Rainer Stiefelhagen. Video Face Clustering with Self-Supervised Representation Learning. *IEEE Transactions on Biometrics, Behavior, and Identity Science (T-BIOM)*.

2018 **Vivek Sharma** and Sule Yildirim-Yayilgan. Real-time Holistic Scene Understanding using Single Depth Images for Safe Human-Robot Collaboration. Under Review, minor corrections.

2017 **Vivek Sharma**, Jon Yngve Hardeberg, Sony George. RGB-NIR Image Enhancement by Fusing Bilateral and Weighted Least Squares Filters. In *Journal for Imaging, Science & Technology (JIST-First)*.

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\* contributed equally to the work, and not in alphabetical order.

– Conferences & Workshops

★ Distributed ML & Privacy-Preserved CV/ML: suppression, obfuscation, sanitization, and synthetic-data release

- 2024 Kartik Patwari\*, Chen-Nee Chuah, Lingjuan Lyu, and **Vivek Sharma\***. PerceptAnon: Exploring the Human Perception of Image Anonymization Beyond Pseudonymization. *In ICML, Poster.*
- 2023 Xiaoxiao Sun, Nidham Gazagnadou, **Vivek Sharma**, Lingjuan Lyu, Hongdong Li, Liang Zheng. Privacy Assessment on Reconstructed Images: Are Existing Evaluation Metrics Faithful to Human Perception? *In NeurIPS, Spotlight.*
- 2023 Abhishek Singh, Praneeth Vepakomma, **Vivek Sharma**, and Ramesh Raskar. Posthoc privacy guarantees for collaborative inference with modified Propose-Test-Release. *In NeurIPS, Poster.*
- 2022 Abhishek Singh, Ethan Garza, Ayush Chopra, Praneeth Vepakomma, **Vivek Sharma**, and Ramesh Raskar. Decouple-and-Sample: Protecting sensitive information in task agnostic data release. *In ECCV, Poster.*
- 2022 Ayush Chopra, Abhinav Java, Abhishek Singh, **Vivek Sharma**, and Ramesh Raskar. Learning to Censor by Noisy Sampling. *In ECCV, Poster.*
- 2022 Abhishek Singh, Praneeth Vepakomma, **Vivek Sharma**, and Ramesh Raskar. Formal Privacy Guarantees for Neural Network queries by estimating local Lipschitz constant. *In ICML Workshop on Formal Verification of Machine Learning, Oral.*
- 2022 Abhishek Singh, **Vivek Sharma**, John Mose, Rohan Sukumaran, Emily Zhang, and Ramesh Raskar. Reconstruction benchmark for obfuscated representations. *Under review.*
- 2022 Ayush Chopra, Surya Kant Sahu, Abhishek Singh, Abhinav Java, Praneeth Vepakomma, **Vivek Sharma**, and Ramesh Raskar. AdaSplit: Adaptive Trade-offs for Resource-constrained Distributed Deep Learning. *Arxiv pre-print, under review.*
- 2021 Abhishek Singh, Ayush Chopra, Ethan Garza, Emily Zhang, Praneeth Vepakomma, **Vivek Sharma**, Ramesh Raskar. DISCO: Dynamic and Invariant Sensitive Channel Obfuscation for deep neural networks. *In IEEE CVPR, Poster.*
- 2020 Abhishek Singh, **Vivek Sharma**, Ayush Chopra, Praneeth Vepakomma and Ramesh Raskar. Dynamic Channel Pruning for Privacy. *In NeurIPS Workshop on Privacy Preserving Machine Learning, Oral.*
- 2020 Iker Ceballos, **Vivek Sharma**, Eduardo Mugica, Abhishek Singh, Alberto Roman, Praneeth Vepakomma, and Ramesh Raskar. SplitNN-driven Vertical Partitioning. *Under Review.*
- 2019 **Vivek Sharma**, Praneeth Vepakomma, Tristan Swedish, Ken Chang, Jayashree Kalpathy-Cramer, and Ramesh Raskar. ExpertMatcher: Automating ML Model Selection for Users in Resource Constrained Countries. *In NeurIPS Workshop on Machine learning for the Developing World (ML4D), Poster.*
- 2019 **Vivek Sharma**, Praneeth Vepakomma, Tristan Swedish, Ken Chang, Jayashree Kalpathy-Cramer, and Ramesh Raskar. ExpertMatcher: Automating ML Model Selection for Clients using Hidden Representations. *In NeurIPS Workshop on Robust AI in Financial Services: Data, Fairness, Explainability, Trustworthiness, and Privacy, Oral.*

★ Video Understanding (spatio-temporal): supervised, self-supervised, and unsupervised settings

- 2023 Ali Diba, **Vivek Sharma**, Mohammad.M Arzani, Luc Van Gool. Spatio-Temporal Convolution-Attention Video Network. *In IEEE ICCV Workshop on New Ideas in Vision Transformers, Poster.*

- 2021 Ali Diba, **Vivek Sharma**, Reza Safdari, Dariush Lotfi, Saquib Sarfraz, Rainer Stiefel-  
ICCV Luc Van Gool. Vi<sup>2</sup>CLR: Video and Image for Visual Contrastive Learning of Representation. *In IEEE ICCV, Poster.*
- 2021 M. Saquib Sarfraz, Naila Murray, **Vivek Sharma**, Ali Diba, Luc Van Gool, Rainer Stiefel-  
CVPR Temporally-Weighted Hierarchical Clustering for Unsupervised Action Segmentation. *In IEEE CVPR, Poster.*
- 2020 **Vivek Sharma\***, Ali Diba\*, Mohsen Fayyaz\*, Manohar Paluri, Juergen Gall, Rainer Stiefel-  
ECCV hagen, and Luc Van Gool. Large Scale Holistic Video Understanding. *In ECCV, Oral.*
- 2019 **Vivek Sharma\***, Ali Diba\*, Luc Van Gool, and Rainer Stiefel-  
ICCV Action and Motion Network. *In IEEE ICCV, Oral.*
- 2019 **Vivek Sharma**, Makarand Tapaswi, and Rainer Stiefel-  
ICCV Encoding for Video Ordering. *In ICCV Workshop on Holistic Video Understanding, Oral.*
- 2018 Ali Diba, Mohsen Fayyaz, **Vivek Sharma**, Amir Hossein Karami, Rahman Yousefzadeh,  
ECCV Juergen Gall, Luc Van Gool. Spatio-Temporal Channel Correlation Networks for Action Classification. *In ECCV, Poster.*
- 2018 Ali Diba, Mohsen Fayyaz, **Vivek Sharma**, Amir Hossein Karami, Mohammad Mahdi Arzani,  
CVPR Rahman Yousefzadeh, Luc Van Gool. Temporal 3D ConvNets using Temporal Transition Layer. *In IEEE CVPR Workshop: Brave New Ideas for Video Understanding, Oral.*
- 2017 **Vivek Sharma\***, Ali Diba\*, Luc Van Gool. Deep Temporal Linear Encoding Networks. *In IEEE CVPR, Poster.*

★ Face Representation Learning: self-supervised, and unsupervised settings

- 2022 Tzofi Klinghoffer, Kushagra Tiwary, Arkadiusz Balata, **Vivek Sharma**, and Ramesh Raskar.  
ECCV Physically Disentangled Representations. *In ECCV workshop on Visual Object-oriented Learning meets Interaction: Discovery, Representations, and Applications.*
- 2020 **Vivek Sharma**, Makarand Tapaswi, M. Saquib Sarfraz, and Rainer Stiefel-  
FG based Contrastive Learning for Improving Face Representations. *In IEEE Automatic Face and Gesture Recognition (FG), Poster.*
- 2019 M. Saquib Sarfraz, **Vivek Sharma**, and Rainer Stiefel-  
CVPR Clustering Using First Neighbor Relations. *In IEEE CVPR, Oral.*
- 2019 Veith Röthlingshöfer\*, **Vivek Sharma\*** and Rainer Stiefel-  
ACMMM Grouping on Graphs. *In ACMML, Spotlight.*
- 2019 **Vivek Sharma**, Makarand Tapaswi, M. Saquib Sarfraz, and Rainer Stiefel-  
FG Supervised Learning of Face Representations for Video Face Clustering. *In IEEE Automatic Face and Gesture Recognition (FG), Oral. Best Paper Award.*
- 2017 **Vivek Sharma**, Saquib M. Sarfraz, Rainer Stiefel-  
CVPR Face Clustering in TV Series. *In IEEE CVPR Workshop: Brave New Motion Representations, Poster.*

★ Domain Adaptation: unsupervised setting

- 2020 **Vivek Sharma**, Naila Murray, Diane Larlus, M. Saquib Sarfraz, Rainer Stiefel-  
WACV Gabriela Csurka. Unsupervised Meta-Domain Adaptation for Fashion Retrieval. *In IEEE Winter Conference on Applications of Computer Vision (WACV), Oral.*

★ Object Detection: weakly-supervised setting

- 2019 **Vivek Sharma\***, Ali Diba\*, Rainer Stiefel-  
CVPR Discovery by Generative Adversarial & Ranking Networks. *In IEEE CVPR Workshop on Compact and Efficient Feature Representation and Learning in Computer Vision (CEFRL), Oral.*

- 2017 Ali Diba, **Vivek Sharma**, Ali Pazandeh, Hamed Pirsiavash, Luc Van Gool. Weakly Supervised CVPR Cascaded Convolutional Networks. *In IEEE CVPR, Poster.*
- ★ Image Enhancement: supervised setting; Visible-NIR, multi-spectral imaging
- 2018 **Vivek Sharma**, Ali Diba, Davy Neven, Michael S. Brown, Luc Van Gool, Rainer Stiefelhagen. CVPR Classification Driven Dynamic Image Enhancement. *In IEEE CVPR, Poster.*
- 2018 **Vivek Sharma\***, Concong Wang\*, Yu Fan, Faouzi Alaya Cheikh, Azeddine Beghdadi, Ole CIC Jacob Elle, and Rainer Stiefelhagen. Can Image Enhancement be Beneficial to Find Smoke Images in Laparoscopic Surgery? *Color and Imaging Conference (CIC)*, **Oral.**
- 2017 **Vivek Sharma**, Jon Yngve Hardeberg, Sony George. RGB-NIR Image Enhancement by CIC Fusing Bilateral and Weighted Least Squares Filters. *In Color and Imaging Conference (CIC)*, **Oral.**
- 2016 **Vivek Sharma**, Luc Van Gool. Does V-NIR based Image Enhancement Come with Better arXiv Features? *CoRR abs/1608.06521.*
- ★ Multi-modal Sensor Fusion: multi-spectral and hyper-spectral imaging
- 2016 **Vivek Sharma**, Ali Diba, Tinne Tuytelaars, Luc Van Gool. Hyperspectral CNN for Image arXiv Classification & Band Selection, with Application to Face Recognition.
- 2016 **Vivek Sharma**, Luc Van Gool. Image-level Classification in Hyperspectral Images using arXiv Feature Descriptors, with Application to Face Recognition. *CoRR abs/1605.03428.*
- 2012 **Vivek Sharma**, Dario Udovicic, Stevan Dordevic, Antonio Lucio. Sensor Fusion for Pedes- Tech. Report trian Tracking. *Institute of Industrial Information Technology (IIIT), Karlsruhe Institute of Technology, Germany.*
- ★ Pose Recognition: RGB and depth-based
- 2016 **Vivek Sharma**, Şule Yildirim-Yayilgan, Luc Van Gool. Low-Cost Scene Modeling using a RO-MAN Density Function Improves Segmentation Performance. *In IEEE RO-MAN*, **Oral.**
- 2015 **Vivek Sharma**, Şule Yildirim-Yayilgan, Frank Dittrich, Luc Van Gool. Efficient Real-Time ICML Pixelwise Object Class Labeling for Safe Human-Robot Collaboration in Industrial Domain. *In ICML Workshop: Machine Learning for Interactive Systems*, **Oral.**
- 2015 **Vivek Sharma**, Frank Dittrich, Şule Yildirim-Yayilgan, Luc Van Gool. Improving Human CVPR Pose Recognition Accuracy using CRF modeling. *In IEEE CVPR Workshops, Poster.*
- 2015 **Vivek Sharma**, Frank Dittrich, Şule Yildirim-Yayilgan, Ali Shariq Imran, Heinz Wörn. How HCI to tune a Random Forest for Real-Time Segmentation in Safe Human-Robot Collaboration? *In International Conference on HCI, Poster.*
- 2015 **Vivek Sharma**, Frank Dittrich, Şule Yildirim-Yayilgan, Heinz Wörn. How does Energy EMMCVPR Minimization Improve Recognizing Human Poses for Safe Human-Robot Collaboration? *In EMMCVPR, Poster.*
- 2014 Frank Dittrich, **Vivek Sharma**, Heinz Wörn, Şule Yildirim-Yayilgan. Pixelwise Object Class ICNSC Segmentation based on Synthetic Data using an Optimized Training Strategy. *In IEEE ICNSC*, **Oral.**
- 2012 **Vivek Sharma**. CADaVISION: A Gesture Recognition Simulation. *Institute of Process Tech. Report Control, Automation & Robotics, Karlsruhe Institute of Technology, Germany.*
- ★ Health: COVID-19, contact-tracing
- 2021 Chirag Samal, Kasia Jakimowicz, Krishnendu Dasgupta, Haris Nazir, Ishaan Singh, Mehrab arXiv Singh Gill, Orna Mukhopadhyay, Parth Patwa, Priyanshi Katiyar, QamilMirza, Sualeha Irshad, Saras Agrawal, Saurish Srivastava, Sheshank Shankar, Rohanlyer, Rohan Sukumaran, Ashley Mehra, Anshuman Sharma, Sethuraman T. V, Abhishek Singh, Maurizio Arseni, **Vivek Sharma**, Ramesh Raskar. Vaccination Worldwide: Strategies, Distribution and Challenges. *Technical Report*



- 2021 arXiv Darshan Gandhi, Rohan Sukumaran, Priyanshi Katiyar, Alex Radunsky, Sunaina Anand, Shailesh Advani, Jil Kothari, Kasia Jakimowicz, Sheshank Shankar, Krutika Misra, Aishwarya Saxena, Sanskruti Landage, Richa Sonker, Parth Patwa, Aryan Mahindra, Mikhail Dmitrienko, Kanishka Vaish, Ashley Mehra, Srinidhi Murali, Rohan Iyer, Joseph Bae, **Vivek Sharma**, Abhishek Singh, Rachel Barbar, Ramesh Raskar. Digital Landscape of COVID-19 Testing: Challenges and Opportunities. *Technical Report*
- 2021 arXiv Manuel Morales, Rachel Barbar, Darshan Gandhi, Sanskruti Landage, Joseph Bae, Arpita Vats, Jil Kothari, Sheshank Shankar, Rohan Sukumaran, Himi Mathur, Krutika Misra, Aishwarya Saxena, Parth Patwa, Maurizio Arseni, Shailesh Advani, Kasia Jakimowicz, Sunaina Anand, Priyanshi Katiyar, Ashley Mehra, Rohan Iyer, Srinidhi Murali, Aryan Mahindra, Mikhail Dmitrienko, Saurish Srivastava, Ananya Gangavarapu, Steve Penrod, **Vivek Sharma**, Abhishek Singh, Ramesh Raskar. COVID-19 Tests Gone Rogue: Privacy, Efficacy, Mismanagement and Misunderstandings. *Technical Report*
- 2020 arXiv Joseph Bae, Darshan Gandhi, Jil Kothari, Sheshank Shankar, Jonah Bae, Parth Patwa, Rohan Sukumaran, Sethuraman T. V., Krutika Misra, Srinidhi Murali, Aishwarya Saxena, Kasia Jakimowicz, **Vivek Sharma**, Rohan Iyer, Ashley Mehra, Alex Radunsky, Priyanshi Katiyar, Sunaina Anand, Shailesh Advani, Jagjit Dhaliwal and Ramesh Raskar. Challenges of Equitable Vaccine Distribution in the COVID-19 Pandemic. *Technical Report*
- 2020 arXiv Jay Luthar\*, **Vivek Sharma\***, Siddhant Gokhale, and Ramesh Raskar. COVID-driven Risk Profile. *Technical Report*
- 2020 arXiv Ramesh Raskar, Dr. Ranu Dhillon, Dr. Suraj Kapa, Deepti Pahwa, Renaud Falgas, Lagnojita Sinha, Aarathi Prasad, Abhishek Singh, Andrea Nuzzo, Rohan Iyer, and **Vivek Sharma**. Comparing manual contact tracing and digital contact advice. *Technical Report*
- 2020 Ramesh Raskar, Abhishek Singh, Kahlil Louisy, Sam Zimmerman, Ankit Ranjan, Aarathi Prasad, Deepti Pahwa, Shrikant Kanapart, Sheshank Shankar, and **Vivek Sharma**. Comparison of Co-location Technologies for Exposure Calculations in COVID-19. *Technical Report*

## Invited Talks



- 2024 **World Economic Forum (WEF), Davos, Speaker.**
1. State of AI in India: Priorities & Opportunities by Government of India and Invest India. (<https://www.linkedin.com/feed/update/urn:li:activity:7151845717739716608/>)
  2. Future of HealthCare by Deerfield Cure (<https://www.linkedin.com/feed/update/urn:li:activity:7153004298778415104/>)
  3. Digital Sovereignty: Navigating today's geopolitical landscape through the lens of digital sovereignty and self-determination by Digitalswitzerland ([https://www.linkedin.com/posts/fanny-pulver\\_wef2024-digital-selfdetermination-activity-7153067932955095040-bSOD](https://www.linkedin.com/posts/fanny-pulver_wef2024-digital-selfdetermination-activity-7153067932955095040-bSOD))
- 2022
- Privacy-Preserving Computer Vision. Sony AI, Sony Research, Japan
  - Privacy-Preserving Computer Vision. Harman International, Samsung, USA
  - Recent Advances in Unsupervised Representation Learning. Bosch Center for AI, Germany
  - Unsupervised Video Representation Learning. *Video Understanding Symposium 2022*, University of Amsterdam, Netherlands.
  - Recent Advances in Video Understanding. Hosted by Felix Heidrich. *Tulip*, Germany/USA.
- 2021
- Recent Advances in Unsupervised Representation Learning. Computational Color and Spectral Imaging Workshop *Norwegian University of Science and Technology*, Norway.

- 2020
  - ExpertMatcher: Automating ML Model Selection w/wo Privacy Concerns. "See below the skin" *Computational Privacy Track, National Science Foundation*, Boston, USA.
  - Video Understanding. Hosted by Hazim Kemal Ekenel. *Istanbul Technical University (ITU), Turkey* and *Ecole polytechnique Federale de Lausanne (EPFL), Switzerland*.
  - Self-Supervised Face Representation Learning & Video Understanding. *Machine Learning Plus Online Program*, Beijing, China.
- 2019
  - Recent Advances in Unsupervised Face Representation Learning and Video Understanding. Hosted by Ser-Nam Lim and Manohar Paluri. *Facebook*, Boston, USA.
  - Recent Advances in Image and Video Representation Learning. Hosted by Patrick Buehler. *Microsoft*, Boston, USA.
  - Unsupervised Representation Learning. *Harvard Medical School, Harvard University*, Cambridge, USA.
  - Recent Advances in Video Understanding. Hosted by Alan Sullivan. *Mitsubishi Electric Research Labs (MERL)*, Boston, USA.
  - Recent Advances in Video Understanding. Hosted by Hilde Kuehne. *MIT-IBM Watson Lab*, Boston, USA.
  - Temporal 3D ConvNets. *In Advances in Imaging Course - MIT Professional Education*, Boston, USA.
  - Self-supervised Face Representation Learning. Hosted by Samson Timoner. *ISM Connect*, Boston, USA.
  - Dynamic Image Enhancement. *Camera Culture Group, Massachusetts Institute of Technology*, Boston, USA.
  - Role of Multispectral Image Fusion for Vision Applications. *OCM SpectroNet Collaboration Conference 2019*, Karlsruhe, Germany.
- 2018
  - Robust and effective feature representation for robotic and vision applications. Hosted by Anton Milan. *Amazon Research*, Berlin, Germany.
  - Unsupervised Feature Learning for Person Identification. Hosted by Herve Bredin, Camille Guinaudeau, and Claude Barras. *University of Paris-Sud and LIMSI*, Paris, France.
  - The Choice is Yours: To Enhance or not To Enhance. Hosted by Florent Perronnin and Naila Murray. *NAVER Labs (previously Xerox R&D)*, Grenoble, France.
- 2017 Multi/Hyper-Spectral Imaging Applications in Computer Vision. *3rd Global Summit and Expo on Multimedia & Applications*, Lisbon, Portugal.
- 2016 Pose Estimation & Recognition. Hosted by Daniel Veithen. *Sony Depthsensing Solutions (previously SoftKinetic)*, Brussels, Belgium.
- 2015
  - Multi/Hyper-Spectral Imaging Applications. *SpectroNet International Collaboration Forum*, Jena, Germany.
  - Efficient Real-Time Pixelwise Object Class Labeling for Safe Human-Robot Collaboration in Industrial Domain. *KU Leuven*, Leuven, Belgium.
- 2014
  - Scene Understanding using Conditional Random Fields for Safe Human Robot Collaboration. Hosted by Ole Jakob Elle. *University of Oslo and Oslo University Hospital*, Ullevål, Norway.
- 2010 Radio Frequency & Identification. *Institute of Electronics & Telecommunication Engineers (IETE), BKBIET*, India.

## Professional Service / Commissions of Trust

### Reviewer

- **Conference.** CVPR ('18,'19,'20,'21,'22,'23), ICCV ('19,'21,'23), ECCV ('18,'20,'22,'24), ICPR ('18), FG ('17,'18,'19,'20), GRSL ('16, '17), TBIOM ('19), TPAMI ('22)
- **Workshop.** NeurIPS: AI for Social Good ('19,'20)






## Program Committee







- **Conference.** AACL ('20,'21)
- **Workshop.** CVPR: Brave New Motion Representations ('17), Large Scale Holistic Video Understanding (ICCV'19, CVPR'21, CVPR'22, CVPR'23, CVPR'24), ICCV: Multi-modal Video Analysis and Moments in Time Challenge ('19,'20), ICLR Workshop on Distributed and Private Machine Learning ('21), CVPR Workshop on Transformers for Vision ('22), Transformers for Vision ('22)
- **Tutorial.** Large Scale Holistic Video Understanding (CVPR'20, ICCV'21)
- **Workshop.** ICLR: Tackling Climate Change with Machine Learning ('20,'21)

## Organization

### Initiative

- 2024-now  **Leading Beyond Boundaries.**  
During the World Economic Forum Annual Meeting 2024, the MIT Media Lab, Camera Culture Group, and MIT Connection Science, kicked off "Leading Beyond Boundaries" in Davos. Organizing with Robert Mahari (MIT, Harvard), Abhishek Singh (MIT), Alex "Sandy" Pentland (MIT), and Ramesh Raskar (MIT). Focus of this year was Healthcare, Privacy, and Generative AI. <https://leadingbeyondboundaries.github.io/>
- 2019-now  **Large Scale Holistic Video Understanding.**  
Organizing with Ali Diba (KU Leuven), Shyamal Buch (Stanford), Mohsen Fayyaz (Uni. Bonn), Manohar Paluri (Facebook AI Research), David Ross (Google Research), Ehsan Adeli (Stanford University), Juergen Gall (Uni. Bonn), Rainer Stiefelhagen (KIT) and Luc Van Gool (ETH Zurich, KU Leuven). <https://holistic-video-understanding.github.io/>
- 2024-now  **Privacy-Preserving Computer Vision.**  
Organizing with Abhishek Singh (MIT), Ehsan Adeli (Stanford University), Ali Diba (KU Leuven), Luc Van Gool (ETH Zurich), Lingjuan Lyu (Sony Research) Dawn Song (UC Berkeley), Lorenzo Servadei (Sony Research), Li Fei-Fei (Stanford University), Michael Spranger (Sony Research), Hiroaki Kitano (Sony Group Corp., Sony Research), and Ramesh Raskar (MIT). <https://privacy-preserving-computer-vision.github.io/>

### Instructor

- Fall/2022  **AI and Web3 for Impact: Venture Studio. MAS.665/15.375/EC.731/IDS.865J.**  
Held at Cambridge, USA. Organized with Ramesh Raskar (MIT), Joost Paul Bensen (MIT), and Shahid Azim.
- Spring/2022  **AI for Impact: Venture Studio. 15.376 / MAS.664.**  
Held at Cambridge, USA. Organized with Ramesh Raskar (MIT), Joost Paul Bensen (MIT), Ryan Chin (TRAM Global/MIT) and Ramiro Almeida (TRAM Global/MIT).
- Fall/2021  **AI for Impact: Building Global Ventures Solving Societal-Scale Problems. MAS.665/15.375/EC.731/IDS.865J.**  
Held at Cambridge, USA. Organized with Alex "Sandy" Pentland (MIT), Ramesh Raskar (MIT), and Colleagues.
- Spring/2021  **AI for Impact: (re)Building a New Economy & AI for Health. 15.376 / MAS.664.**  
Held at Cambridge, USA. Organized with Alex "Sandy" Pentland (MIT), Ramesh Raskar (MIT), and Colleagues.
- Fall/2020  **MIT Global Ventures: Data & AI for Resilience after COVID19 ~ Scale, Inclusion, Impact. MAS.665/15.375/EC.731/IDS.865J.**  
Held at Cambridge, USA. Organized with Alex "Sandy" Pentland (MIT), Ramesh Raskar (MIT), Joost Bensen (MIT) and Colleagues.
- 7/19  **Advances in Imaging Course - MIT Professional Education.**  
Lead Instructor: Ramesh Raskar. Helped with organizing hands-on experiment sessions on computer vision and deep learning. Held at MIT, Boston, USA.

## Conference/Summit

### 12/20 **The MIT "Vaccines For All" Conference.**



Held at Cambridge, USA. Organized with Ramesh Raskar (MIT), Sanjay Sarma (MIT), Jagjit Dhaliwal (MIT Sloan), Susan Blumenthal (formerly U.S. Department of Health and Human Services), and Shirley Bergin (formerly, TEDMED).

### 07/20 **Responsible Data Summit.**



Held at Berkeley, USA. Organized with Dawn Song (UC Berkeley), Ramesh Raskar (MIT), Evgenios M. Kornaropoulos (UC Berkeley), Abhishek Singh (MIT), Xiaoyuan Liu (UC Berkeley), Anne Fauvre (Oasis Labs), Moti Yung (Google), Andrew Trask (OpenMined), Richard Janda (University of Montreal), Yun William Yu (University of Toronto) and Alex Feerst (Responsible Data Foundation).

### 2020 **MIT Program for Trusted Pandemic Technologies.**



Held at Cambridge, USA. Organized with Ramesh Raskar (MIT) and Colleagues.

### 01/20 **MIT India Initiative - Design, Technology & Social Innovation Workshop.**



Held at Mumbai, India. Organizing with 30+ MIT and Harvard students.

### 02/16 **Annual Symposium in Optics.**

OSA SPIE SPIE/OSA KU Leuven Student Chapter to be held on 8-9th Feb. 2016 in Leuven.

### 03/12 **IONS-Germany.**

OSA SPIE Under the OSA KIT CHAPTER Student Branch OSKAR.

### 09/10 **Green Earth & Talk on Chandrayan II (Space Vehicle Flight & Launch).**

IEEE Under the IEEE BKBIET CHAPTER Student Branch (Region 10).

## Workshop

### 01/24 **Privacy-Preserving Computer Vision: Privacy for Vision & Imaging.**

WACV Held at Hawaii, USA. Organized with Abhishek Singh (MIT), Ehsan Adeli (Stanford), Ali Diba (KU Leuven), Luc Van Gool (ETH Zurich), Lingjuan Lyu (Sony Research) Dawn Song (UC Berkeley), Lorenzo Servadei (Sony Research), Li Fei-Fei (Stanford), Michael Spranger (Sony Research), Hiroaki Kitano (Sony Group Corp., Sony Research), and Ramesh Raskar (MIT).

### 06/23 **CVPR Workshop on Large Scale Holistic Video Understanding.**

CVPR Held at Vancouver, Canada. Organized with Ali Diba (KU Leuven), Shyamal Buch (Stanford), Mohsen Fayyaz (Uni. Bonn), Manohar Paluri (Meta AI), David Ross (Google Research), Ehsan Adeli (Stanford), Juergen Gall (Uni. Bonn), Rainer Stiefelhagen (KIT) and Luc Van Gool (ETH Zurich, KU Leuven).

### 06/22 **CVPR Workshop on Large Scale Holistic Video Understanding.**

CVPR Held at New Orleans, USA. Organized with Ali Diba (KU Leuven), Shyamal Buch (Stanford), Mohsen Fayyaz (Uni. Bonn), Manohar Paluri (Meta AI), David Ross (Google Research), Ehsan Adeli (Stanford), Juergen Gall (Uni. Bonn), Rainer Stiefelhagen (KIT) and Luc Van Gool (ETH Zurich, KU Leuven).

### 09/22 **Medical Applications with Disentanglements (MAD).**

MICCAI Held at Singapore. Organized with Jana Fragemann (Uni. Hospital Essen), Jianning Li (Uni. Hospital Essen), Jens Kleesiek (Uni. Hospital Essen), Jan Egger (Uni. Hospital Essen), Xiao Liu (Uni. Edinburgh), Zhiming Cui (ShanghaiTech Uni.), and Sotirios A. Tsaftaris (Uni. Edinburgh).

### 05/21 **Joint NSF-NIST Workshop: To Develop a Roadmap for Greater Public Use of Privacy-Sensitive Government Data.**



Held virtually. Organized with Chris Clifton (Purdue Uni.), Bradley Malin (Vanderbilt Uni.), Anna Oganian (NCHS, CDC), Ramesh Raskar (MIT), Tess K. DeBlanc-Knowles (White House Office of Science and Technology Policy) and Naomi Lefkovitz (NIST, U.S. Dept. of Commerce).

### 10/21 **ICCV Workshop on Open-World Video Object Detection and Segmentation Challenge.**



Held at Montreal, Canada. Organized with Facebook AI Research: Du Tran, Weiyao Wang, Heng Wang, Matt Feiszli, Lorenzo Torresani, Manohar Paluri and Rainer Stiefelhagen (KIT).

06/21 **CVPR Workshop on Large Scale Holistic Video Understanding.**

CVPR Held at Nashville, Tennessee, United States. Organizing with Ali Diba (KU Leuven, Sensifai), Mohsen Fayyaz (Uni. Bonn), Manohar Paluri (Facebook AI Research), David Ross (Google Research), Ehsan Adeli (Stanford University), Juergen Gall (Uni. Bonn), Rainer Stiefelhagen (KIT) and Luc Van Gool (ETH Zurich, KU Leuven).

05/21 **ICLR Workshop on Distributed and Private Machine Learning.**

ICLR To be held at Vienna, Austria. Organizing with Praneeth Vepakomma (MIT), Fatemehsadat Mireshghallah (UCSD), Ayush Chopra (MIT), Abhishek Singh (MIT), Adam Smith (Boston University), Ramesh Raskar (MIT), Gautam Kamath (University of Waterloo).

10/19 **ICCV Workshop on Large Scale Holistic Video Understanding.**



Held at Seoul, Korea. Organizing with Ali Diba (KU Leuven, Sensifai), Mohsen Fayyaz (Uni. Bonn), Manohar Paluri (Facebook AI Research), Juergen Gall (Uni. Bonn), Rainer Stiefelhagen (KIT) and Luc Van Gool (ETH Zurich, KU Leuven).

**Tutorial**

10/21 **ICCV Tutorial on Large Scale Holistic Video Understanding.**

ICCV Held at Montreal, Canada. Organizing with Ali Diba (KU Leuven, Sensifai), Shyamal Buch (Stanford), Mohsen Fayyaz (Uni. Bonn), Manohar Paluri (Facebook AI Research), David Ross (Google Research), Ehsan Adeli (Stanford University), Juergen Gall (Uni. Bonn), Rainer Stiefelhagen (KIT) and Luc Van Gool (ETH Zurich, KU Leuven).

06/20 **CVPR Tutorial on Large Scale Holistic Video Understanding.**

CVPR Held at Seattle, USA. Organizing with Ali Diba (KU Leuven, Sensifai), Mohsen Fayyaz (Uni. Bonn), Manohar Paluri (Facebook AI Research), Juergen Gall (Uni. Bonn), Rainer Stiefelhagen (KIT) and Luc Van Gool (ETH Zurich, KU Leuven).

**Member of Organizations**

01/15-Now **Student Member**, CVF, Member of Computer Vision Foundation.

07/15-1/17 **Representated KU Leuven**, SpectroNet Cross-clustering Collaboration Forum.

03/15-09/16 **Vice-President**, SPIE, OSA, KU Leuven Chapter.

02/14-09/14 **Student Member**, TEKNA, NTNU Chapter.

11/11-10/14 **Technical Leader**, OSKAR(Optics Students Karlsruhe) KIT Chapter OSA, SPIE.

03/10-06/11 **Secretary**, IEEE BKBIET CHAPTER.

06/08-06/11 **Co-Founder, President**, TECHNORATS, TECHNICAL CLUB, BKBIET.

**Languages**

Hindi **Native**

English **Advanced**

German **Intermediate Level B1**

*Conversationally fluent*