

EDUCATION

- Max Planck Institute for Intelligent Systems, Tübingen** Tübingen, Germany
PhD Computer Science; Meta PhD Fellow 2023 (21/3200 applicants) Jan 2026
Thesis: Physics-informed modeling of dynamic humans and their interactions
Grade: summa cum laude (highest), Advisor: Prof. Michael J. Black
Committee: Michael J. Black, Jitendra Malik, Andreas Geiger, Gerard Pons-Moll
- Carnegie Mellon University, School of Computer Science** Pittsburgh, USA
Master of Science in Computer Vision (MSCV) Dec 2018
GPA: 4.15/4.33, Advisor: Prof. Kris Kitani
- Birla Institute of Technology and Science (BITS), Pilani** Hyderabad, India
Bachelor of Engineering with Honors in Electronics and Communication July 2016
Engineering, Minor in Finance
GPA: 9.16/10 (top 2% among 1500 students, Merit scholarship recipient)

PUBLICATIONS

- **UniCon3R: Unified Contact-aware 4D Human-Scene Reconstruction from Monocular Video**
T Sur, [S Tripathi](#), N Athanasiou, H L Nguyen, K Xu, M J Black, A Yao. (in review)
- **Towards in-the-wild Egocentric 3D Hand-Object Pose Estimation**
S Bansal, J Zhao, [S Tripathi](#), Z Zhu, M J Black, D Damen. (in review)
- **PICO: Reconstructing 3D People In Contact with Objects** <https://pico.is.tue.mpg.de>
[S Tripathi](#), A Cseke, S Dwivedi, A Lakshmipathy, M J Black, D Tzionas. CVPR 2025
- **InteractVLM: 3D Interaction Reasoning from 2D Foundational Models** <https://interactvml.is.tue.mpg.de/>
S Dwivedi, D Antić, [S Tripathi](#), O Taheri, C Schmid, M J Black, D Tzionas. CVPR 2025
- **HUMOS: Human Motion Model conditioned on Body Shape** <https://carstenepic.github.io/humos>
[S Tripathi](#), O Taheri, C Lassner, M J Black, D Holden, C Stoll. ECCV 2024
- **DECO: Dense Estimation of 3D Human-Scene Contact in the Wild** <https://deco.is.tue.mpg.de>
[S Tripathi](#), A Chatterjee, J Passy, H Yi, D Tzionas, M J Black. ICCV 2023 (oral)
- **EMOTE: Emotional Speech-Driven Animation with Content-Emotion Disentanglement**
R Danecek, K Chhatre, [S Tripathi](#), Y Wen, M Black, T Bolkart. SIGGRAPH Asia 2023 <https://emote.is.tue.mpg.de>
- **3D Human Pose Estimation via Intuitive Physics**
[S Tripathi](#), L Muller, C P Huang, O Taheri, M J Black, D Tzionas. CVPR 2023 <https://ipman.is.tue.mpg.de>
- **BITE: Beyond Priors for Improved Three-D Dog Pose Estimation**
N Rüegg, [S Tripathi](#), K Schindler, M J Black, S Zuffi. CVPR 2023 <https://bite.is.tue.mpg.de>
- **MIME: Human-Aware 3D Scene Generation**
H Yi, C P Huang, [S Tripathi](#), L Hering, J Thies, M J Black. CVPR 2023 <https://mime.is.tue.mpg.de>
- **PERI: Part Aware Emotion Recognition In The Wild**
A Mittel, [S Tripathi](#). ECCVW 2022 <https://cvml.page.link/peri>
- **Ocluded Human Mesh Recovery**
R Khirodkar, [S Tripathi](#), K Kitani. CVPR 2022 <https://cvml.page.link/ochmr>
- **AGORA: Avatars in Geography Optimized for Regression Analysis**
P Patel, P C Huang, J Tesch, D T Hoffman, [S Tripathi](#), M J Black. CVPR 2021 <https://cvml.page.link/agora>
- **PoseNet3D: Unsupervised 3D Human Shape and Pose Estimation**
[S Tripathi](#), S Ranade, A Tyagi, A Agarwal. 3DV 2020 (oral) <https://cvml.page.link/pose>
- **Learning to Generate Synthetic Data via Compositing**
[S Tripathi](#), S Chandra, A Agarwal, A Tyagi, J Rehg, V. Chari. CVPR 2019 <https://cvml.page.link/learn>
- **C2F: Coarse-to-fine Vision Control System for Automated Microassembly**
[S Tripathi](#), D Jain, H Sharma. *Nanotechnology and Nanoscience Asia, 2018* <https://cvml.page.link/c2f>
- **Sub-cortical morphology and voxel based features for Alzheimer's disease classification**
[S Tripathi](#), SH Nozadi, M Shakeri, S Kadoury. *ISBI 2017* <https://cvml.page.link/shape>
- **Deep spectral-based shape features for Alzheimer's Disease classification**
M Shakeri, H Lombaert, [S Tripathi](#), S Kadoury. *MICCAI-SESAMI, 2016* <https://cvml.page.link/spec>

PATENTS

- **Three-dimensional pose estimation.**
[S Tripathi](#), S Ranade, A Tyagi, A Agarwal. *US Patent 11526697*
- **Generation of synthetic image data using three-dimensional models.**
[S Tripathi](#), S Chandra, A Agarwal, A Tyagi, J Rehg, V. Chari. *US Patent 10909349*
- **Generation of synthetic image data for computer vision models**
[S Tripathi](#), S Chandra, A Agarwal, A Tyagi, J Rehg, V. Chari. *US Patent 10860836*

- PICO: Reconstructing 3D People In Contact with Objects** Jun 2024 – Nov 2025
Advisor: Michael Black, Dimitrios Tzionas
- Collected PICO-db, a dataset of 3D contact correspondences using a novel body-to-object contact transfer approach
 - Built PICO to recover humans, objects, and their interactions (HOI) - all in 3D, from just a single internet image.
- HUMOS: Human Motion Model conditioned on Body Shape** Jun 2023 – Dec 2023
Advisor: Carsten Stoll, Daniel Holden, Christoph Lassner, Michael Black Epic Games, San Francisco
- Built HUMOS, a self-supervised human motion model conditioned on body shape – trained with novel cycle consistency, intuitive physics and stability constraints
- DECO: Dense Estimation of 3D Human-Scene Contact in the Wild** Nov 2022 – Mar 2023
Advisor: Dimitrios Tzionas, Michael Black MPI-IS, Tubingen
- Collected DAMON, a large-scale dataset with dense vertex-level 3D contact annotations for in-the-wild human-object interactions
 - Trained DECO, a novel regressor that predicts vertex-level 3D contacts on a body from a single RGB image
- 3D Human Pose Estimation via Intuitive Physics** Dec 2021 – Nov 2022
Advisor: Dimitrios Tzionas, Michael Black MPI-IS, Tubingen
- Proposed novel biomechanically inspired intuitive physics terms that are simple, differentiable and compatible with parametric body models such as SMPL/SMPLX
 - Demonstrated that incorporating differentiable physics improves 3D human pose estimation
 - Collected Mocap data with extreme poses to test our approach in challenging scenarios
- Occluded Human Mesh Recovery** Aug 2021 – Dec 2021
Advisor: Kris Kitani CMU
- Proposed a novel top-down mesh recovery architecture capable of leveraging image spatial context for handling multi-person occlusion and crowding
- AGORA: Avatars in Geography Optimized for Regression Analysis** Aug 2020 – Dec 2020
Advisor: Michael Black MPI-IS, Tubingen
- Developed a 3D human shape and pose estimation model trained on synthetic data that generalizes to real scenes using various 2D and 3D losses
- PoseNet3D: Unsupervised 3D Human Shape and Pose Estimation** Feb 2019 – Nov 2019
Collaborators: Amit Agarwal, Amrbrish Tyagi Amazon Lab126
- Proposed self-consistency and adversarial losses to train a novel unsupervised model to estimate 3D human pose from RGB videos
 - Solved issues such as occlusion, domain-gap and temporal jitter leading to realistic and smooth 3D sequence reconstructions on multiple in-the-wild video datasets
- Learning to Generate Synthetic Data via Compositing** May 2018 – Nov 2018
Advisors: James Rehg, Amit Agrawal, Amrbrish Tyagi Amazon Lab126
- Proposed a network for generating novel composite images that retain scene context and realism
 - Developed algorithms for efficient training of object detection and image classification models on synthetic composite data, using an online hard-positive mining approach
 - Improved baseline Faster-RCNN mAP by 3.5% and baseline SSD mAP by 2.7% on various datasets.
- Deep Spectral-based Shape Features for Alzheimer's Disease Classification** Feb 2016 – Jul 2016
Undergraduate Thesis, Advisor: Samuel Kadoury Univ. of Montreal
- Developed an unsupervised framework for classification of Alzheimer's disease patients using noisy T1-weighted MRI brain images
 - Proposed a combination of grey-matter voxel-based intensity variations and 3D structural (shape) features parameterized with a spherical-harmonics representation
 - Results presented near state-of-the-art accuracies (>89%) – outperformed conventional MRI shape-based strategies by 22%-27%
- C2F: Coarse-to-Fine Vision Control System for Automated Microassembly** May 2014 – Dec 2014
Advisor: H D Sharma Central Electronics Engineering Research Institute, Pilani
- Developed a completely automated, visual-servoing based closed loop system to perform 3D micromanipulation and microassembly tasks
 - Results led to a ~75% reduction in setup and run time as compared to manual operation, while mitigating any

risk of collision during grasp-and-drop experiments

SCHOLARSHIPS AND AWARDS

- Winner of the MaXImize startup incubation grant for agentic game development (50k €) 2026
- Selected for the Doctoral Consortium at CVPR 2025 (35 accepted participants) 2025
- Outstanding Reviewer Award – ECCV 2020, CVPR 2025, CVPR 2026
- Winner of the Meta Research PhD Fellowship Award 2023 (21/3200 applicants) 2023
- Best business model and best pitch, Cyber Valley Startup Incubation Program 2022, Germany for our startup “YOGI – a virtual yoga classroom” 2022
- IISc Bangalore Summer Research Fellowship – top 20 across India 2015
- *Best Technical Association Award*, BITS-Pilani 2014
- Tournament Winner, Cricket, Arena'13 National Sports Festival 2013
- Undergraduate MERIT scholarship, BITS Pilani – top 2% students 2012
- Founder President's Scholarship, Amity International – top student for 6 years 2011
- Junior Science Talent Search Examination (JSTSE) Scholarship – Ranked 22 in 20,000 applicants 2008

ACADEMIC DUTIES

Organizer – RHOBIN Workshop, CVPR 2024, CVPR 2025 [Website link](#)
• 36 participating teams and 142 submissions. Top 7 methods established new state-of-the-art [CVPR 2024]
Organizer – 3D HUMANS Workshop, CVPR (2024, 2025), ECCV 2026 [Website link](#)
Reviewer – CVPR (2026, 2025, 2024, 2022, 2021, 2020), ICCV (2023, 2021), ECCV (2020, 2026), BMVC 2022, PG 2024
Session Chair – International Max Planck Research Schools (IMPRS) Interview Symposium, 2024

TALKS

- *PICO: Reconstructing 3D People in Contact with Objects* 19 Oct 2025
Oral presentation at ICCV 2025 ([gDT-IV](#), [Rhobin](#))
- *Physics-informed Modelling of Dynamic Humans and their Interactions* 28 Mar 2024
AI Talks, National Technological University (NTU), Singapore
- *DECO: Dense Estimation of 3D Human-Scene Contact in the Wild* 4 Oct 2023
Oral presentation at ICCV 2023

PROFESSIONAL EXPERIENCE

Max Planck Institute for Intelligent Systems Tübingen, Germany
Postdoctoral researcher Jan 2026 – present
Meta Zurich, Switzerland
Research Intern Oct 2024 – Mar 2025
Built a multi-modal large foundation model (VLM) for grounding human activities within 3D scene and enabling advanced spatial reasoning queries using egocentric inputs from a head-mounted device
Epic Games San Francisco, USA
Research Intern June 2023 – Dec 2023
Build a novel motion model, HUMOS, capable of generating natural, physically-plausible and dynamically stable human motions given a target body shape
Amazon Sunnyvale, USA
Applied Scientist II (AS-II) (*promoted from AS-I in Sep 2020*) Feb 2019 – Feb 2021
Improved 3D human activity reconstruction from 2D videos for enhancing action recognition/detection. Supported Computer Vision algorithm development for the new Echo Show. Worked on virtual try-on and body measurement estimation from images.
Amazon Lab126 Cupertino, USA
Applied Scientist Intern May 2018 – Aug 2018
Worked on task-aware generation of synthetic image composites for training deep networks
Franklin Templeton Investments Hyderabad, India
Summer Intern | Project: Financial Modelling for Tactical Asset Allocation May 2015 – Aug 2015
Built machine-learning models for capturing statistical associations like lead-lag correlation and one directional causality which achieved a 12% improvement in hit-rate for forecasting yield-spreads (US-OAS)

TEACHING EXPERIENCE

Teaching Assistant – 16-720: Computer Vision, Prof. Kris Kitani Fall 2018, CMU
Head Teaching Assistant – 16-385: Computer Vision, Prof. Ioannis Gkioulekas Summer 2018, CMU

MENTORING

Alpar Cseke Masters at University of Tübingen → Research Engineer at Meshcapade (2023 – Now)
Agniv Chatterjee Bachelors at Jadavpur University → Ph.D. at UT Austin (Georgios Pavlakos) (2022 – 2023)

ACADEMIC PROJECTS

Learning Scene Saliency Maps Using Superpixel-augmented Convolutional Neural Networks Aug 2017 – Dec 2017
• Extracted SLIC superpixel segmentations as input to a Siamese CNN, achieving 4x faster training times with improved spatial context and accuracy in output saliency maps
Towards Integrating Model Dynamics for Sample Efficient Reinforcement Learning Jan 2017 – May 2017

- Learned a dynamics model of the world by assuming domain-specific priors on real-world episodes. Used the learned dynamics model to augment real-world episodes as the training progressed
- Established that augmenting real-world data using an approximate world-model tends to be significantly more sample efficient than naïve model-free reinforcement learning

LEADERSHIP

- Member, External Affairs Committee (Graduate Student Assembly), CMU
- Secretary, Electrical and Electronics Association, BITS Pilani
Led a team of 37 members. Organised 25 major events, 6 during the technical festival
- Computer Vision Mentor, Student Mentorship Program (SMP), BITS Pilani
Conducted evening classes for teaching 30 junior batch students
- Represented BITS Pilani cricket team in inter-college cricket tournaments and sports festivals
- Organizer of National Seminar on Indian Space Technology (NSIST-2014)

EXTRA-CURRICULAR

- Teaching volunteer at Nirmaan – BITS Pilani | www.nirmaan.org Mar 2014 – Dec 2015
- Teaching volunteer at LaSalle Boys and Girls Club, Montreal | www.bgclasalle.com Mar 2016 – Jul 2016
- Teaching volunteer at Amitasha – Teaching the girl child | www.amity.edu/amitasha Mar 2009 – Mar 2010