



Rama Krishna Kandukuri

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RESEARCH EXPERIENCE

Researcher, Embodied Vision Group

June 2020 – Nov 2023

Max Planck Institute for Intelligent Systems, Tübingen

- Research focused on vision-based object manipulation employing differentiable physics.
- Developed and published methods for physically plausible rigid body tracking in 3D from RGB-D videos, accompanied by a video dataset with motion capture and physics data.
- Worked on methods for training 6D rigid body pose estimation from images, methods for planning and control through contacts and frictional constraints with learned physics, and methods for using differentiable rendering for unsupervised learning of scene's physics.

Master's Thesis, Embodied Vision Group

Oct 2019 – May 2020

Max Planck Institute for Intelligent Systems, Tübingen

Master's thesis: 1.0

Research on supervised, self-supervised learning methods for identifying physical parameters from videos in 2D using differentiable physics and spatial transformer networks.

Research Intern, Embodied Vision Group

July 2019 – Sep 2019

Max Planck Institute for Intelligent Systems, Tübingen

Developed controllers for the Franka arm, allowing it to seamlessly transition between trajectories when a new goal is set mid-execution to ensure real-time safety and adherence to joint state limits.

Student Research Assistant, Computer Vision Group

Nov 2018 – June 2019

University of Siegen

Implemented object detection and tracking with Siamese networks on a mobile robot. Worked on adversarial robustness in image classification.

EDUCATION

Master's degree in Mechatronics Engineering. University of Siegen Oct 2017 – May 2021

Bachelor's degree in Mechanical Engineering, NIT Rourkela, India July 2012 – April 2016

SKILLS

- 6 years of professional coding experience in python.
 - Intermediate level coding experience in C++ and CUDA and scripting in MATLAB.
 - Experienced in training networks in PyTorch.
 - Experienced with developing robotic software using ROS.
 - More than 4 years of research experience and knowledge of state of the art literature.
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PUBLICATIONS

- Rama Kandukuri, Jan Achterhold, Joerg Stueckler, [Learning to Identify Physical Parameters from video Using Differentiable Physics](#), GCPR, 2020 (**oral, honourable mention**), IJCV 2021.
- Rama Kandukuri, Michael Strecke, Joerg Stueckler, [Physics-Based Rigid Object Tracking and Friction Filtering from RGB-D Videos](#), arXiv: abs/2309.15703, 2023 (**In submission**).