

# Ren Li

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## RESEARCH SUMMARY

My academic interests lie at the intersection of 3D vision, computer graphics, and machine learning, focusing on 3D object representations and reconstruction, geometric computing, and physics-based simulation.

In details, I leverage differentiable neural representations and physical constraints in geometry optimization to address challenges in deformable surface modeling. My work has broad applications, including 3D reconstruction, human digitization, robotics, physical scene understanding, and emerging fields such as VR/AR, e-commerce, and fashion.

## Education

### École polytechnique fédérale de Lausanne (EPFL)

Ph.D. in Computer Science

Advisor: **Prof. Pascal Fua**

Lausanne, Switzerland

Sept. 2021 - July 2025

### Mohamed bin Zayed University of Artificial Intelligence (MBZUAI)

Visiting Ph.D. student in Computer Vision

Advisor: **Prof. Hao Li**

Abu Dhabi, UAE

Oct. 2024 - Dec. 2024

### Purdue University

M.Sc. in Electrical and Computer Engineering

• Overall GPA: 3.94/4.0

West Lafayette, U.S.

Aug. 2016 - May 2019

### University of Science and Technology of China (USTC)

B.Sc. of Electrical Engineering

• Overall GPA: 4.00/4.3, Rank: 1/106

• **Guo Moruo Scholarship** (the most highly regarded honor by USTC)

Hefei, China

Aug. 2012 - Jun. 2016






## Publications

### JOURNAL ARTICLES


- **Ren Li**, Jared S. Johansen, Hamad Ahmed, Thomas V. Ilyevsky, Ronnie B Wilbur, Hari M Bharadwaj, Jeffrey Mark Siskind, "The Perils and Pitfalls of Block Design for EEG Classification Experiments", **IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)**, 2021. 📄
- Srikrishna Karanam\*, **Ren Li\***, Fan Yang\*, Wei Hu, Terrence Chen, Ziyang Wu, "Towards Contactless Patient Positioning", **IEEE Transactions on Medical Imaging (TMI)**, 2020. 📄

### CONFERENCE PROCEEDINGS


- **Ren Li**, Cong Cao, Corentin Dumery, Yingxuan You, Hao Li, Pascal Fua, "Single View Garment Reconstruction Using Diffusion Mapping Via Pattern Coordinates", **SIGGRAPH**, 2025. 📄
- Corentin Dumery, Noa Etté, Aoxiang Fan, **Ren Li**, Jingyi Xu, Hieu Le, Pascal Fua, "Counting Stacked Objects", **ICCV (Oral)**, 2025. 📄
- **Ren Li**, Corentin Dumery, Zhantao Deng, Pascal Fua, "Reconstruction of Manipulated Garment with Guided Deformation Prior", **NeurIPS**, 2024. 📄
- **Ren Li**, Corentin Dumery, Benoît Guillard, Pascal Fua, "Garment Recovery with Shape and Deformation Priors", **CVPR**, 2024. 📄
- **Ren Li**, Benoît Guillard, Pascal Fua, "ISP: Multi-Layered Garment Draping with Implicit Sewing Patterns", **NeurIPS**, 2023. 📄
- Luca De Luigi\*, **Ren Li\***, Benoît Guillard, Mathieu Salzmann, Pascal Fua, "DrapeNet: Garment Generation and Self-Supervised Draping", **CVPR**, 2023. 📄
- **Ren Li**, Benoît Guillard, Edoardo Remelli, Pascal Fua, "DIG: Draping Implicit Garment over the Human Body", **ACCV (Oral)**, 2022. 📄
- **Ren Li**, Meng Zheng, Srikrishna Karanam, Terrence Chen, Ziyang Wu, "Everybody Is Unique: Towards Unbiased Human Mesh Recovery", **BMVC (Oral)**, 2021. 📄

- Runze Li, Srikrishna Karanam, **Ren Li**, Terrence Chen, Bir Bhanu, Ziyang Wu, "Learning Local Recurrent Models for Human Mesh Recovery", **3DV**, 2021. 
- Georgios Georgakis\*, **Ren Li**\*, Srikrishna Karanam, Terrence Chen, Jana Kosecka, Ziyang Wu, "Hierarchical Kinematic Human Mesh Recovery", **ECCV**, 2020. 
- Fan Yang\*, **Ren Li**\*, Srikrishna Karanam, Terrence Chen, Haibin Ling, Ziyang Wu, "Robust Multi-modal 3D Patient Body Modeling", **International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)**, 2020. 
- Liming Jiang, **Ren Li**, Wayne Wu, Chen Qian, Chen Change Loy, "DeeperForensics-1.0: A Large-Scale Dataset for Real-World Face Forgery Detection", **CVPR**, 2020. 
- Yijian Xiang, Lu Fang, **Ren Li**, N. M. Cheung, "Depth Error Induced Virtual View Synthesis Distortion Estimation for 3D Video Coding", **IEEE Data Compression Conference (DCC)**, 2015. 

## WORKSHOPS

- Corentin Dumery, Aoxiang Fan, **Ren Li**, Nicolas Talabot, Pascal Fua, "Enforcing View-Consistency in Class-Agnostic 3D Segmentation Fields", **CVPRW**, 2025. 

## PREPRINTS

- Cong Cao\*, **Ren Li**\*<sup>†</sup>, Corentin Dumery, Hao Li, "Learning Sewing Patterns via Latent Flow Matching of Implicit Fields", arxiv, 2026. 
- Yingxuan You\*, **Ren Li**\*<sup>†</sup>, Corentin Dumery, Cong Cao, Hao Li, Pascal Fua, "Spatio-Temporal Garment Reconstruction Using Diffusion Mapping via Pattern Coordinates", 2026.

\*Equal contribution. <sup>†</sup> Corresponding author.

## Patents

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- "Automating a medical environment", US Patent, 2023.

## Work Experience

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### MBZUAI

Abu Dhabi, UAE

Postdoc Associate

Sept. 2025 - Now

- Conduct research in AI with a focus on 3D scene understanding, generative modeling, neural rendering, or video synthesis.
- Develop and implement AI-driven algorithms for 3D asset generation, animation, or virtual environment simulation.
- Advisor: **Prof. Hao Li**

### EPFL

Lausanne, Switzerland

Research Assistant

Sept. 2021 - Aug. 2025

- *3D Cloth Modeling*: Representing, draping and recovering garment with implicit functions.
- Advisor: **Prof. Pascal Fua**

### United Imaging Intelligence

Boston, MA, U.S.

Research Assistant

Sept. 2019 - Mar. 2021

- *Human Mesh Recovery*: Recovering human pose and shape from RGB-D or RGB input under daily or medical environment for the contactless patient positioning system.
- Advisor: **Dr. Ziyang Wu** and **Dr. Srikrishna Karanam**

### SenseTime

Beijing, China

Research Intern/Part-time Researcher

May 2019 - Feb. 2020

- *Face Forgery*: Building a large-scale dataset and a GAN-based model for face forgery.

### Purdue University

West Lafayette, IN, U.S.

Research Assistant

Sept. 2016 - May 2019

- *EEG-Based Visual Classification*.
- *Visual Relationship Detection for Video Retrieval*.

### Gottfried Wilhelm Leibniz Universität Hannover

Germany

Research Assistant

Jan. 2016 - May 2016

- *Contact-Free Camera Measurements of Heart Rate*.
- Advisor: **Prof. Jörn Ostermann**

- *Synthesis Distortion Estimation in 3D Video.*
- Advisor: **Prof. Lu Fang**

## Awards & Honors

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2021	EDIC Fellowship	EPFL
2015	<b>Guo Moruo Scholarship (Top 1%)*</b>	USTC
2014	National Scholarship (Top 2%)	Ministry of Education of China
2014	The Talent Program Scholarship (Top 3%)	USTC
2013	Institute of Electronics Scholarship (1/101)	Chinese Academy of Sciences (CAS)

\*Guo Moruo Scholarship is the first scholarship of P.R. China, and the most highly regarded honor by USTC students and alumni, in name of our first president Mr. Guo Moruo.

## Academic Service

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**Reviewer** CVPR, SIGGRAPH, NeurIPS, ICCV, ECCV, TVCG, ACCV, Pacific Graphics, Pattern Recognition, IEEE T-BIOM

## Teaching Activities

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<b>Teaching Assistant</b>	MATH-111: Linear Algebra.	2022, 2023
	CS-442: Computer vision.	2022
	CS-233: Introduction to machine learning.	2023, 2024
<b>Student Supervision</b>	Yingxuan You, PhD student	
	Luca De Luigi, PhD student	
	Ali Raed Ben Mustapha, MSc student	
	Zhaobo Wang, MSc student	
	Xingchen Li, MSc student	