

Uday Kusupati

Ph.D. Candidate
School of Computer and Communication Sciences,
Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland

[Google Scholar](#)

EDUCATION

- Swiss Federal Institute of Technology Lausanne (EPFL)** *Oct 2020 - Present*
Ph.D. in Computer Science, Advisor: [Prof. Mark Pauly](#)
- The University of Texas at Austin** *Aug 2018 - May 2020*
Master's in Computer Science, GPA: **4.0/4.0**
- Indian Institute of Technology Bombay** *Jul 2014 - May 2018*
B.Tech (Honours) in Computer Science and Engineering with Minor in Mathematics, GPA: **9.0/10.0**

PUBLICATIONS

7. **Computational Design of a Kit of Parts for Bending-Active Structures**
Uday Kusupati*, Quentin Becker*, Seiichi Suzuki, Mark Pauly
ACM Transactions on Graphics (SIGGRAPH Asia), 2024 (* joint first author)
6. **Semantic Shape Editing with Parametric Implicit Templates**
Uday Kusupati, Mathieu Gaillard, Jean-Marc Thiery, Adrien Kaiser
Proceedings of SIGGRAPH Conference Papers, 2024
5. **Computational Homogenization for Inverse Design of Surface-based Inflatables**
Yingying Ren, Julian Panetta, Seiichi Suzuki, Uday Kusupati, Florin Isvoranu, Mark Pauly
ACM Transactions on Graphics (SIGGRAPH North America), 2024
4. **RUM: Reconfigurable Umbrella Mesh**
Uday Kusupati, Florin Isvoranu, Seiichi Suzuki, Mark Pauly
Advances in Architectural Geometry (AAG), 2023
3. **Umbrella Meshes: Elastic Mechanisms for Freeform Shape Deployment**
Uday Kusupati*, Yingying Ren*, Julian Panetta, Florin Isvoranu, Davide Pellis, Tian Chen, Mark Pauly
ACM Transactions on Graphics (SIGGRAPH North America), 2022 (* joint first author)
Best Paper Award Honorable Mention
2. **Normal Assisted Stereo Depth Estimation**
Uday Kusupati, Shuo Cheng, Rui Chen, and Hao Su
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2020
1. **Learning 3D Human Pose from Structure and Motion**
Rishabh Dabral, Anurag Mundadha, Uday Kusupati, Safeer Afaque, Abhishek Sharma, and Arjun Jain
The European Conference on Computer Vision (ECCV), 2018.

RESEARCH EXPERIENCE

- Geometric Computing Laboratory, EPFL** *Oct 2020 - Present*
Ph.D. Candidate - Advisor: [Prof. Mark Pauly](#) Lausanne, CH
- Computational frameworks for design, optimization and rationalization of bending-active and deployable structures
 - Inverse design and exploration of shape-morphing structures like umbrella meshes, inflatables and kirigami
 - Designing reconfigurable and re-usable adaptations of deployable structures for sustainable architectural practices
- Adobe Research** *July 2022 - Sep 2022*
Research Intern - Advisors: [Prof. Jean-Marc Thiery](#), [Dr. Adrien Kaiser](#) Paris, FR
- A novel approach for deforming meshes semantically by coupling parametric implicit templates
- Media Analytics, NEC Laboratories America** *May 2020 - Aug 2020*
Research Intern - Advisors: [Dr. Buyu Liu](#), [Prof. Manmohan Chandraker](#) San Jose, CA
- A parametric representation for holistic indoor scene understanding and reconstruction (patent filed at the USPTO)
- SU Lab, University of California San Diego** *May 2019 - Aug 2019*
Visiting Graduate Researcher - Advisor: [Prof. Hao Su](#) San Diego, CA

- A deep-learning framework to captures an implicit understanding of surface normal information as well as enforce depth-normal consistency for improved stereo depth estimation

The University of Texas at Austin

Jan 2019 - May 2019

Graduate Researcher - Advisor: [Prof. Qixing Huang](#)

Austin, TX

- Leveraging language based supervision for 3D Human Pose estimation in noisy and ill-posed scenarios.
- An approach for topology aware single-view mesh reconstruction and polygon-based image segmentation.

Indian Institute of Technology Bombay

Jan 2017 - May 2018

Undergraduate Researcher - Advisor: [Prof. Siddhartha Chaudhuri](#)

Mumbai, IN

- Scene parsing and reconstruction with stochastic grammars and recursive neural networks.
- Inverse design of furniture optimized to specific affordance measures

Samsung Research Korea

May 2017 - Jul 2017

Research Intern - Advisor: Dr. Inkwon Choi

Seoul, KR

- Worked on resource-efficient object recognition algorithms for an automated robot cleaner

Indian Institute of Technology Bombay

Jul 2017 - May 2018

Undergraduate Researcher - Advisor: [Prof. Arjun Jain](#)

Mumbai, IN

- A semi-supervised learning method using a structure-aware loss function along with a temporal network for 3D Human Pose Estimation in real-time

DATASHAPE team, Inria Sophia Antipolis

May 2017 - Jul 2017

Research Intern - Advisor: [Dr. Jean-Daniel Boissonnat](#)

Sophia Antipolis, FR

- Worked on implementing a probabilistic approach to reduce algebraic complexity of Delaunay Triangulations

SELECTED AWARDS AND HONORS

- SIGGRAPH North America 2022 Technical Papers: **Best Paper Award** Honorable Mention 2022
- EPFL IC Distinguished Service Award 2021, 2022
- EPFL EDIC Fellowship 2020 - 2021
- **All India Rank 11** in JEE Advanced (IIT-JEE) 2014 among 150,000 students qualified from 1.5 million 2014
- **AP Grade** for exceptional performance in Engineering Graphics & Drawing, IIT Bombay 2014
- KVPY Fellowship, Government of India 2013

TALKS

- *Technical Paper Presenter*, **ACM SIGGRAPH North America 2024**, Denver, USA 2024
- *Invited Speaker*, **University of Washington**, Seattle, USA 2024
- *Invited Speaker*, **University of Edinburgh**, Edinburgh, Scotland 2024
- *Paper Presenter*, **AAG 2023**, Stuttgart, Germany 2023
- *Invited Technical Paper Presenter*, **IEEE VIS 2022**, Oklahoma City, USA 2022
- *Contributed talks presenter*, **Graphyz 2**, Saline Royale d'Arc-et-Senans, France 2022
- *Technical Paper Presenter*, **ACM SIGGRAPH North America 2022**, Vancouver, Canada 2022
- *Paper Presenter*, **IEEE CVPR 2020**, Seattle, USA 2020

MENTORSHIP

- Antoine Tran (Masters student, EPFL), Topic: Latent Space Physical Simulation Ongoing
- Davor Dobrota (Masters student, EPFL), Topic: Inverse Design of Nonlinear Springs Ongoing
- Fabio Lourenco (Masters student, EPFL), Topic: Optimization of curve networks for Stretchable Implants 2024
- Mathilde Simoni (Masters student, EPFL), Topic: Latent Space Physical Simulation 2024
- Jae-Yoon Cha (Exchange student, EPFL), Topic: Shape Space of Tensioned Fabrics with Polygonal Patches 2023
- Danila Zubko (Masters student, EPFL), Topic: Latent Space Physical Simulation 2023
- Paul Keller (Masters student, EPFL), Topic: Actuation of Umbrella-Meshes 2022
- Cosme Jordan (Masters student, EPFL), Topic: Generative Inverse Design of Kirigami Sheets 2021
- Hang Yin (Undergraduate student, CMU), Topic: Interactive Surface Parametrization 2021

- SIGGRAPH RCDC Gradschool Application Mentor

2021

- [Department Academic Mentor](#), CSE, IIT Bombay

2017-18

TEACHING EXPERIENCE

- **EPFL**

- Geometric Computing (Fall 2021, 2022, 2024)
- The GCMaker Project (Spring 2023)
- Advanced information, computation and communication (Fall 2023)
- Theory of Computation (Spring 2021, 2022)

- **UT Austin**

- Computer Graphics (Spring 2020)
- Natural Language Processing (Fall 2019)
- Computer Graphics Honors (Spring 2019)

- **IIT Bombay**

- Computer Programming and Utilisation (Spring 2018, Fall 2017)
- Data Structures and Algorithms (Spring 2017)