

# Pratheba Selvaraju

✉ pratheba@gmail.com    ☎ +49 174 5990770    🔗 pratheba.github.io    in prathebaselvaraju    🌐 prathebaselva

## Current Position

**Research Assistant**, *Max Planck Institute for Intelligent Systems - Perceiving Systems* [🔗](#)  
(directed by [Dr. Michael J. Black](#) [🔗](#))

Tübingen, Germany  
February 2025 – Present

## Research Interest

- Geometry processing and shape deformation in 3D graphics and vision.
- 3D reconstruction using generative modeling approaches (Diffusion).
- Digital twin creation with novel view synthesis approach (Gaussian splatting).
- Design pattern and 3D modeling for sustainability efforts.
- Applications of 3D vision in world modeling, robotics, and real-world interactive systems.

## Education

**Ph.D.** *University of Massachusetts, Amherst, Computer Science* Massachusetts, 2018 – 2024  
**Thesis:** *Exploring Representations for 3D Reconstruction from Impaired Real-World Data* [🔗](#), directed by [Prof. Erik G. Learned Miller](#) [🔗](#)

**M.S.** *Columbia University, Computer Science* New York, 2011 – 2012

## Work Experience

**Research Intern**, *Roblox* California, 2024  
Shape deformation : Template garment adaptation to different Roblox Avatars  
- *Geometry processing, ARAP*

**Research Intern**, *Microsoft* Washington (Remote), 2022  
3D face reconstruction : From single view images  
- *Diffusion models*





**Software Engineer Intern**, *Google* California (Remote), 2022  
3D object detection: Identification of building parts from LIDAR point clouds and images  
- *Implicit model, Point cloud Segmentation*

**Research Intern**, *Meta* Washington (Remote), 2020  
Virtual object placement: Placement of virtual TV panels in virtual oculus environment  
- *AR/VR*

**Software Engineer**, *IMO* California, 2017  
**Software Engineer**, *Machine Zone* California, 2016  
**Software Engineer**, *Microsoft* Washington, 2013-2016


## Publications

- **OFER: Occluded Face Expression Reconstruction** [🔗](#) CVPR, 2025  
**Pratheba Selvaraju** [🔗](#), Victoria Fernández Abrevaya, Timo Bolkart, Rick Akkerman, Tianyu Ding, Faezeh Amjadi, Ilya Zharkov
- **FORA: Fast-Forward Caching in Diffusion Transformer Acceleration** [🔗](#) ArXiv, 2024  
**Pratheba Selvaraju** [🔗](#), Tianyu Ding, Tianyi Chen, Ilya Zharkov, Luming Liang
- **Developable Approximation of Neural Implicits via Rank Minimization** [🔗](#) 3DV, 2024  
**Pratheba Selvaraju** [🔗](#)

- [A 3D digitisation workflow for architecture-specific annotation of built heritage](#)  JASREC, 2021  
Marissia Deligiorgi, Maria I Maslioukova, Melinos Averkiou, Andreas C Andreou, **Pratheba Selvaraju** , Evangelos Kalogerakis, Gustavo Patow, Yiorgos Chrysanthou, George Artopoulos
- [BuildingNet: Learning to Label 3D Buildings](#)  ICCV, 2021 (**Oral**)  
**Pratheba Selvaraju** , Mohamed Nabail, Evangelos Kalogerakis, Siddhartha Chaudhuri

## Ongoing Projects

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- **Shape Deformation with style preservation** First Author  
Adaptation of a geometry and style to topologically and morphologically different shapes.
- **3D Garment synthesis from in-the-wild images** Second Author & Collaborator  
Defining new domain specific language (DSL) using LLM's and garment parametric model for accurate garment synthesis from in the wild images.
- **VOFER: Video & Audio based occluded face expression reconstruction** External Instructor  
Extension of [OFER](#)  to multi-modal input of audio and video sequence.

## Students

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- [Dharmendra Selvaratnam](#) : *University of Plymouth, London*

## Professional Activities

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- IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- IEEE International Conference on Computer Vision (ICCV)
- IEEE European Conference on Computer Vision (ECCV)
- Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- SIGGRAPH
- SIGGRAPH Asia
- International Conference of 3D Computer Vision (3DV)
- Transactions on Visualization and Computer Graphics (TVCG)
- International Journal of Computer Vision (IJCV)

## Skills

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- **Programming** Python, C++
- **Framework** Pytorch, Numpy, Scipy

## Keywords

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- 3D Computer Vision, 3D Computer Graphics
- 3D reconstruction, Dataset creation, Knowledge Graph
- Generative modeling, Implicit reconstruction, Fast transformer, Geometry Processing