

Gopal Sharma

☎ (+1) 413-406-0713 | ✉ gopalsharma@cs.umass.edu | 🏠 hippogriff.github.io | 📷 hippogriff

Work Experience

University of British Columbia

POSTDOCTORAL FELLOW

Vancouver, BC, Canada

2022 - PRESENT

Education

University of Massachusetts, Amherst

PHD IN COMPUTER SCIENCE (GPA: 3.95 / 4.0)

Amherst, MA, USA

2016 - PRESENT

Indian Institute of Technology (IIT), Roorkee

B.TECH. IN ELECTRICAL ENGINEERING (GPA: 8.6 / 10.0)

Roorkee, India

2012 - 2016

Publications

CONFERENCE PAPERS

- *Unsupervised Semantic Correspondence Using Stable Diffusion*. Eric Hedlin, **Gopal Sharma**, Shweta Mahajan, Hossam Isack, Abhishek Kar, Andrea Tagliasacchi, Kwang Moo Yi. ArXiv 2023.
- *MvDeCOR: Multi-view Dense Correspondence Learning for Fine-grained 3D Segmentation*. **Gopal Sharma**, Kangxue Yin, Or Litany, Evangelos Kalogerakis, Subhansu Maji and Sanja Fidler. In 2020 IEEE/CVF European Conference on Computer Vision (ECCV) 2022.
- *SURFIT: : Learning to Fit Surfaces Improves Few Shot Learning on Point Clouds*. **Gopal Sharma**, Bidya Dash, Matheus Gadelha, Aruni RoyChowdhury, Marios Loizou, Evangelos Kalogerakis, Liangliang Cao, Erik Learned-Miller, Rui Wang and Subhansu Maji. Computer Graphics Forum 2022.
- *ParSeNet: A Parametric Surface Fitting Network for 3D Point Clouds*. **Gopal Sharma**, Difan Liu, Evangelos Kalogerakis, Subhansu Maji, Siddhartha Chaudhuri and Radomír Měch. In 2020 IEEE/CVF European Conference on Computer Vision (ECCV).
- *Label-Efficient Learning on Point Clouds using Approximate Convex Decompositions*. Matheus Gadelha, Aruni RoyChowdhury, **Gopal Sharma**, Evangelos Kalogerakis, Liangliang Cao, Erik Learned-Miller, Rui Wang and Subhansu Maji. In 2020 IEEE/CVF European Conference on Computer Vision (ECCV).
- *Search-Guided, Lightly-supervised Training of Structured Prediction Energy Networks*. Amirmohammad Rooshenas, Dongxu Zhang, **Gopal Sharma** and Andrew McCallum. In 2019 Conference on Neural Information Processing Systems (NeurIPS).
- *Learning Point Embeddings from Shape Repositories for Few-Shot Semantic Segmentation*. **Gopal Sharma**, Evangelos Kalogerakis and Subhansu Maji. In 2019 International Conference on 3D Vision (3DV).
- *CSGNet: Neural Shape Parser for Constructive Solid Geometry*. **Gopal Sharma**, Rishabh Goyal, Difan Liu, Evangelos Kalogerakis and Subhansu Maji. In 2018 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR).
- *Persistent Aerial Tracking system for UAVs*. Matthias Mueller, **Gopal Sharma**, Neil Smith and Bernard Ghanem. In 2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

JOURNAL PAPER

- *Attention Beats Concatenation for Conditioning Neural Fields*. Daniel Rebain, Mark J. Matthews, Kwang Moo Yi, **Gopal Sharma**, Dmitry Lagun, Andrea Tagliasacchi. TMLR 2022
- *Neural Shape Parsers for Constructive Solid Geometry*. **Gopal Sharma**, Rishabh Goyal, Difan Liu, Evangelos Kalogerakis and Subhansu Maji. IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI).

Research Experience

Self-supervised learning for 3D shape segmentation

Nvidia, Toronto

RESEARCH INTERNSHIP

May-Sep 2021

- Worked on self-supervised learning for 3D shape segmentation using contrastive learning for fine-grained semantic segmentation.

Parametric Surface Fitting

Adobe, San Jose, CA

RESEARCH INTERNSHIP

May-Aug 2019

- Worked on parametric surface fitting for 3D point cloud. Developed differentiable pipeline to fit bspline surface patches to point cloud.

Learning Visual Programs

UMass

RESEARCH ASSISTANTSHIP

2018

- The aim of the project is to induce programs using neural networks for visual softwares like Photoshops, Blender, Maya etc. We have done preliminary experiments for Constructive Solid Geometry that can generate programs of large lengths.

Exploring LSTMs for shape recognition

UMass

RESEARCH ASSISTANTSHIP

Sep 2016 Feb 2017

- The aim of the project is to exploit the sequential information present in uniformly rendered images from 3D shapes. We used LSTMs for processing sequentially rendered images for 3D shape recognition and retrieval tasks.

Word recognition in natural scene images

IIT

SUMMER INTERNSHIP

May July 2016

- Developed algorithms based on CNNs and bidirectional LSTMs to detect and recognize words in unconstrained natural scenes.

Activity recognition and Object tracking

KAUST

SUMMER INTERNSHIP

May July 2015

- **Persistent Object tracking:** Experimentally demonstrated persistent object tracking methodology for swarm of UAVs. Developed a novel algorithm (C++ and PYTHON) to use object proposals (BING) for object tracking, based on the existing object trackers.

Skills

- **Programming Languages:** Python, Matlab
- **Scientific Computing:** Pytorch, TensorFlow, Keras, Scipy, Scikit-Learn, OpenCV, Eigen, OpenMP
- **Tools:** Git, Emacs, \LaTeX , Visual Studio
- **Courses:** Machine Learning, Intelligent Visual Computing, Probabilistic Graphical Models, Deep Learning, Reinforcement Learning, Mathematical Statistics, Convex Optimization.

Invited talks

ParSeNet: A Parametric Surface Fitting Network for 3D Point Clouds.

Zoom

Oct 2021

- Invited talk at *3d Structure and Compositional Learning* workshop. ICCV 2021.

Fine-grained 3D shape co-segmentation via pixel-based contrastive learning.

Zoom

Sep 2021

- Invited talk at Nvidia (Toronto).

Reinforcement learning for game programming.

Zoom

Dec 2021

- *Game programming* course at UMass Amherst.

Unity Machine Learning Agents.

Zoom

Dec 2020

- *Game programming* course at UMass Amherst.

CSGNet: Neural Shape Parser for Constructive Solid Geometry

Harvard University

Dec 2018

- Invited talk at *New England Computer Vision Workshop*.

Academic services

Journal review

- IEEE TVCG (2019), IEEE TVCG (2020) and IEEE TVCG (2021)

Conference review

- NeurIPS (2019), CVPR (2019), ECCV (2020), NeurIPS (2020), ICCV (2021) and NeurIPS (2021).

Awards

MCM scholarship

IIT Roorkee

2012-2014

References

- Subhansu Maji (smaji@cs.umass.edu)
- Evangelos Kalogerakis (kalo@cs.umass.edu)

More references available upon request.