Srinidhi Hegde

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Education

Purdue University   **2025 - 2030**
Ph.D., Computer Science

(**Relevant Coursework:** Computational Imaging)

University of Maryland, College Park   **2021 - 2023**
M.S., Computer Science   *Overall GPA: 3.97/4*

(**Relevant Coursework:** Computer Processing of Pictorial Information, Advanced Numerical Optimization, Advanced Statistical Pattern Recognition, Algorithms in Machine Learning: Guarantees and Analyses, Computational Methods)

Indraprastha Institute of Information Technology Delhi   **2013 - 2017**
B.Tech, Computer Science and Engineering   *Overall GPA: 8.63/10*

(**Relevant Coursework:** Machine Learning, Computer Vision, Convex Optimization, Probabilistic Graphical Models, GPU Computing, Computer Graphics, Artificial Intelligence, Modern Algorithm Design)

Representative Publications

- **S. Hegde**, K. Kullman, T. Grubb, L. Lait, S. Guimond, M. Zwicker. "NARVis: Neural Accelerated Rendering for Real-Time Scientific Point Cloud Visualization.". 2024. Under Review [Preprint]
- M. Gwilliam, **S. Hegde**, L Tinubu, A Hanson. "Rethinking Common Assumptions to Mitigate Racial Bias in Face Recognition Datasets.". Human-centric Trustworthy Computer Vision From Research to Applications, International Conference on Computer Vision (ICCV) (Oral, **Runner-up, Best Paper Award**), 2021[Paper][Code]
- A. Khattar, **S. Hegde**, R. Hebbalaguppe. "Cross-Domain Multi-task Learning for Object Detection and Saliency Estimation.". Workshop on Continual Learning in Computer Vision, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021 [Paper]
- **S. Hegde**, R. Prasad, R. Hebbalaguppe, V. Kumar. "Variational Student: Learning Compact and Sparser Networks in Knowledge Distillation Framework". IEEE 45th International Conference on Acoustics, Speech, and Signal Processing (ICASSP) (Oral), 2020 [Paper]
- **S. Hegde**, J. Maurya, R. Hebbalaguppe, A. Kalkar. "SmartOverlays: A Visual Saliency Driven Label Placement for Intelligent Human-Computer Interfaces". IEEE Winter Conference on Applications of Computer Vision (WACV), 2020 [Paper][Website]
- G. Garg*, **S. Hegde***, R. Perla, V. Jain, L. Vig, R. Hebbalaguppe. "DrawInAir: A Lightweight Gestural Interface Based on Fingertip Regression". Observing and Understanding Hands in Action, European Conference on Computer Vision (ECCV), 2018 [Paper][Website]

A complete list of publications is available on my webpage.

Work Experiences

Research Assistant, University of Maryland, College Park   **July, 2023 - March, 2025**
Advisor: Prof. Matthias Zwicker

- Designing new **neural point cloud rendering** methods with high fidelity and realism and prototyping and evaluating their performances.
- Developing a **mixed reality tool** with integrated Lagrangian Dynamics (LD) to help scientists identify, track, and understand the evolution of Earth Science phenomena in the NASA GEOS model.
- Collaborating on scientific exploration and analysis of severe atmospheric disturbances with Goddard Space Flight Center, NASA.

Research and Development Intern, Kitware Inc., Carrboro   **Jun, 2022 - Jul, 2022**
Advisors: Dr. Brian Clipp, Dr. Christopher Funk

- Developing **AR-based multi-modal egocentric activity recognition** framework using RGB-D and hand poses from **HoloLens2**
- Designing **two-stage neural network architecture** - stream-specific feature extractor and temporal sequence classifier
- Contributing new features to Kitware's open-source AR-based inspection framework ANGEL system which include - support for **multi-stream inputs** and **synchronized listeners** for mulit-modal data reception via **ROS**

Researcher, TCS Innovation Labs, New Delhi   **Aug, 2017 - Jul, 2021**
Advisors: Ms. Ramya Hebbalaguppe, Dr. Lovekesh Vig

- **Deep Model Optimization for Edge Deployment** - Compressing the memory-intensive DNNs using variational methods and knowledge distillation. Compressed CNNs and MLPs by **213×** and **64×** respectively
- **Unsupervised Animation Transfer** - A geometry invariant animation transfer technique using motion cues from 2.5D (RGB-D) videos to animate target deformable 3D meshes
- **In-air Gestural Interface for AR** - Hand gesture classification through fingertip coordinate regression for touch-less interactions in AR. Classified hand gestures with an **88%** accuracy
- **Situated Visualisation in AR** - Visual saliency based non-intrusive and temporally coherent overlay placement solution for AR/video applications

○ **Research Intern, TCS Innovation Labs, New Delhi**   **May, 2016 - Aug, 2016**
Advisors: Ms. Ramya Hebbalaguppe, Dr. Ehtesham Hasan
- Designing frugal AR framework (costing only $15) with Google Cardboard for Android Platform
- Proposing and developing a near-real time ($< 0.4s$) simple hand gesture interaction technique for a frugal AR framework
- Implementing deep learning backed industrial inspection framework for repair and maintenance of complex systems

Technical Skills

○ **Expertise Area:** *Computer Vision, Machine Learning, Computer Graphics, and Mixed Reality*
○ **Programming Languages:** *Python, C++, C, Java, MATLAB, R*
○ **Tools:** *Pytorch, Nerfstudio, OpenGL/GLSL, CUDA, Blender, Android Studio, Unity, CryEngine*

Teaching Experiences

○ Graduate Teaching Assistant, at UMD: **CMSC 216** - Introduction to Computer Systems (Spring'22, Spring'23), **CMSC 132** - Object-Oriented Programming II (Fall'22).
○ Undergraduate Teaching Assistant, **CSE 560** - GPU Computing at IIITD, Winter 2017, **Graduate Refresher Module** of Data Structures and Algorithms, 2015.

Patents

○ Sparsity Constraints And Knowledge Distillation Based Learning Of Sparser And Compressed Neural Network (Granted)
***Srinidhi Hegde**, Ramya Hebbalaguppe, Ranjitha Prasad*
○ Multi-label Placement For Augmented And Virtual Reality And Video Annotations (Published)
*Ramya Hebbalaguppe, **Srinidhi Hegde**, Jitender Maurya*
○ Real Time Overlay Placement In Videos For Augmented Reality Applications (Granted)
***Srinidhi Hegde**, Ramya Hebbalaguppe*

Professional Services

○ Reviewer: SIGGRAPH'24, ACM MM'25, AAAI'22,'23,'24, TCSVT'21,'22
○ Student Reviewer: Admissions 2022 at the University of Maryland
○ Member: The Computer Vision Foundation, IEEE Signal Processing Society

Awards and Achievements

○ Shortlisted for **ELLIS PhD Program** 2025 among top 200 out of 3200 applicants ($< 6.25\%$) globally with 2 offers.

○ Selected for **ICCP Summer School on Computational Imaging '25** at the **University of Toronto** with USD 1000 financial aid.

○ **Dean's Teaching Excellence Award** 2017 for best teaching assistant for GPU Computing course offered at IIIT Delhi.

○ Received **TCS Citation Award** and **IP Creation Award** from Tata Consultancy Services for an outstanding contribution to the organization through publications.

○ Awarded **IP Creation Award** by Tata Consultancy Services for an outstanding contribution to the organization's IP Assets.

○ Selected for **Eastern European Machine Learning Summer School 2019**, held at Politehnica University of Bucharest, Romania.

○ Qualified for **Computer Vision and Machine Learning Summer School 2017**, organised by Centre for Visual Information Technology, IIIT Hyderabad.

○ Selected for fully-funded scholarship for attending **CVS Vista Summer School 2017** conducted at **York University, Canada**.

○ 1st runner-up in semi-finals of **Annual Science Quiz 2009**, held at National Science Center, Delhi.

○ **Junior Science Talent Search Examination** (JSTSE) 2009 by Directorate of Education, Delhi State Govt. Obtained **34th rank (top 99.4th percentile)** in Delhi State.

Positions of Responsibility

- Mentor for PanIIT Hackathon. Mentored the teams that finished at 3rd and 4th positions in the event. - TCS-PanIIT Conclave 2019 - Jan, 2019
- Publicity & Jury Team - Research Showcase'17, IIITD - Feb, 2017 - Apr, 2017
- Event Head - BrainFuzz, the algorithm design contest, at Esya'16, IIITD - May,2016 - Aug,2016
- Rendering Team and Core Team, Virtual Campus Project at IIITD - May,2015 - Dec,2015
- Teaching Assistant at IIITD for graduate Refresher Module of Data Structures and Algorithms - Jun,2015 - Aug,2015
- Moderator for Rebuttal - Online Debate Event at Esya - IIITD's Tech Fest - Aug,2014