

Vidit Goel

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PUBLICATION

- **SAP Diffusion: Object-Level Image Editing with Structure-and-Appearance Paired Diffusion Models**
Vidit Goel et. al. ICCV 2023 (submitted)
- **Interactive Neural Painting** by Elia Peruzzo, Willi Menapace, *Vidit Goel et. al. CVIU 2023* [\[PDF\]](#)
- **Collaborative Content-Dependent Modeling: A Return to the Roots of Salient Object Detection** by Siyu Jiao, *Vidit Goel et. al. IEEE TIP 2023* [\[PDF\]](#)
- **VideoMatt: A Simple Baseline for Accessible Real-Time Video Matting** by Jiachen Li, Marianna Ohanyan, *Vidit Goel et. al. CVPR 2023 Workshop* [\[PDF\]](#)
- **VideoINR: Learning Video Implicit Neural Representation for Continuous Space-Time Super-Resolution** by Zeyuan Chen, Yinbo Chen, Jingwen Liu, Xingqian Xu, *Vidit Goel et. al. CVPR 2022* [\[PDF\]](#)
- **MSN: Efficient Online Mask Selection Network for Video Instance Segmentation** by *Vidit Goel et. al. CVPR YouTube-VIS Challenge 2021* [\[PDF\]](#)
- **Distill DSM: Computationally efficient method for segmentation of medical imaging volumes** by Harsh Maheshwari, *Vidit Goel et. al. MIDL 2021* [\[PDF\]](#)
- **Mask Selection and Propagation for Unsupervised Video Object Segmentation** by Shubhika Garg, *Vidit Goel WACV 2021* [\[PDF\]](#)
- **Unsupervised Video Object Segmentation using Online Mask Selection and Space-time Memory Networks** by Shubhika Garg, *Vidit Goel CVPR 2020 - DAVIS* [\[PDF\]](#)
- **IROS 2019 Lifelong Robotic Vision: Object Recognition Challenge [Competitions]** Bae, Heechul, Eoin Brophy, Rosa HM Chan, Baoquan Chen, Fan Feng, Gabriele Graffieti, *Vidit Goel et al. IEEE Robotics & Automation Magazine 27, no. 2 (2020): 11-16.* [\[PDF\]](#)
- **Thyroid Nodule Segmentation and Pathological Clustering in Ultrasound Images using a Fast Deep Convolutional Neural Network** by *Vidit Goel et. al. Lecture presentation in CARS 2021*

EDUCATION

Indian Institute of Technology, Kharagpur

M.Tech in Instrumentation and Signal Processing Engineering

B.Tech in (Major) Instrumentation Engineering + (Minor) Computer Science Engineering

CGPA: 8.93

2016-2021

EXPERIENCE

Picsart | Adviser: **Prof. Humphrey Shi**

New York, USA

Senior Applied Scientist (February 2023), Applied Scientist (June 2021)

June 2021 - Present

- Leading the product based on controllable image generation and editing using diffusion models.
- Mentored an intern to successfully initiate and complete controllable image generation and editing project.
- Developed a novel solution for Remove Background tool, leading to highest ever DAU of the tool.
- Lead a team of three to win 3rd position in YouTube Video Instance Segmentation Challenge in CVPR 2021.
- Developed a high impact deep learning based solution for image enhancement and continuous upscaling.

IBM Research Lab | Adviser: **Venkat Chakaravarthy**

Bangalore, India

Neural Network Compression, NLP | Intern

May 2020 - August 2020

- Worked on compressing BERT architecture using tensor train decomposition and knowledge distillation.
- Developed and analysed the method to get compression rates of x200 and FLOP reduction of x7.

SHI Lab | Adviser: **Prof. Humphrey Shi**

Eugene, USA

GANs, Interpretability | Intern

April 2020 - March 2021

- Developed a novel method to reorganize the convolutions as matrix multiplications for analysing GANs.
- Proposed a novel image editing method using eigenvectors of the weights of pre-trained neural network.

KLIV Research Group | Adviser: **Prof. Debdoot Sheet**

Medical Imaging, GANs

IIT Kharagpur

July 2019 - April 2021

- o Won the best thesis award among more than 100 students in Electrical Engineering department.
- o Developed zero-shot method for frequency generalization in simulating the ultrasound images using GANs.
- o Developed a novel Distill Depth Shift Module to segment medical imaging volumes in an efficient manner.

Nepal Winter School in AI

Computer Vision | Teaching Assistant

Pokhara, Nepal

December 2019

- o Mentored and helped participants in the winter school in topics 3D vision, deep learning for computer vision.

Deutsche Bank

Client Analytics | Intern

Mumbai, India

May 2019 - July 2019

- o Developed a software to show impact on balance sheet and P&L when a client takes away the business.
- o Implemented scenario analysis functionality and provided breakdown of different components of balance sheet.

Capillary Technologies | Adviser: **Sumandeep Banerjee**

Face Recognition | Intern

Bangalore, India

May 2018 - July 2018

- o Analysed different face recognition algorithms like SphereFace, ArcFace, FaceNet using tensorflow, MATLAB.
- o Designed an search algorithm in data set with over 1 million data-points consisting of high dimensional data.

Aerial Robotics Kharagpur | Adviser: **Prof. Somesh Kumar**

Localization and Tracking, Computer Vision | Software Team Head

IIT Kharagpur

March 2017 - November 2020

- o Mentored teams in international competitions like IARC and IMAV achieving podium finish.
- o Designed and implemented a variation of Extended Kalman Filter to handle highly non linear trajectories.

COMPETITIONS

CVPR 2021

Third position | YouTube Video Object Segmentation Challenge

Virtual

April 2021 - May 2021

- o Developed a novel method for video instance segmentation and won third position among 1500+ participants.

Inter IIT Tech Meet

Special Mention | Student Academic Conference

Virtual

March 2021

- o Presented our paper in Inter IIT Tech Meet and was honoured by special mention (top 10 among 80+ papers).

CVPR 2020

Winner | DAVIS Challenge on Video Object Segmentation

Seattle, USA

April 2020 - May 2020

- o Developed a novel method for unsupervised video object segmentation achieving state of the art results on DAVIS unsupervised dataset. Won by a margin of 6% using $J\&F$ mean as the metric.

Kshitij 2020(India's Largest Techno-Management Fest)

Winner | Cloud4C Hackathon

Kharagpur, India

January 2020

- o Prototyped a multi-modal solution to analyse GST frauds in the country. Winner in 140+ teams.

IROS 2019

Finalist | Lifelong Robotic Vision Challenge

Macau, China

July 2019 - November 2019

- o Developed a novel method using memory replay to achieve test accuracy of 97.05% on the given dataset.
- o Achieved 2nd position internationally in the first round. Selected in top 8 teams from 150+ teams for finals.

TATA Crucible hackathon

East Zone Finalist | Haystack Mathematician

India

March 2018

- o Designed a novel algorithm for counting cylindrical objects in an image using conventional image processing algorithms and machine learning algorithms. Overall accuracy achieved was more than 85%.

RESPONSIBILITIES

Reviewer

Conferences and Journal

- o Frequent reviewer of internationally renowned avenues ICCV, CVPR, WACV and TCSVT.

Governor

IIT Kharagpur

Technology Robotix Society

August 2016 - February 202

- o Led a three-tier team to successful planning and execution of all the year-long activities of the society which includes organizing the annual Robotix fest(in Kshitij), conducting seminars and workshops for students at IIT Kharagpur and other colleges in India, and initiating new projects to spread and teach robotics.
- o Designed, prototyped and conducted an Image Processing Event Fortress in Kshitij '18.

Mentor

IIT Kharagpur

IEEE Robotics Winter Workshop

December 2017

- o Mentored a week-long workshop on image processing for students at IIT Kharagpur with over 500 participants.