

# Saptakatha Adak

+91 80170 98762 • saptakatha2@gmail.com

## WORK

Junior Research Scientist, BUDDI.AI

(July, 2020 - Present)

- Responsible for research on problems involving electronic health records in form of visual as well as textual data.
- Worked on approaches for automatically segmenting medical codes across different domains to extract information in a structured manner leveraging graph-based techniques and methods like relation extraction with custom knowledge bases.
- Worked on multiple cross-team projects involving Scientists, Software Development Engineers and Product Managers.

## EDUCATION

Program	Institution	CGPA	Year
M.S. by Research (CS&E)	Indian Institute of Technology Madras	8.20/10	July, 2016 - July, 2019
B.Tech (CS&E)	Kalyani Government Engineering College	9.03/10	July, 2012 - June, 2016

## PUBLICATIONS

- Motion-based Occlusion-aware Pixel Graph Network for Video Object Segmentation**, *Saptakatha Adak* and Sukhendu Das, In 26th International Conference on Neural Information Processing (ICONIP), Sydney, Australia, 2019. [Oral] (**Best Student Paper Award**) [[sites.google.com/view/iconip19-pixelgcn-vos/home](https://sites.google.com/view/iconip19-pixelgcn-vos/home)]
- What's there in the dark**, Sauradip Nag\*, *Saptakatha Adak\** and Sukhendu Das, In 26th IEEE International Conference on Image Processing (ICIP), Taipei, Taiwan, 2019. (**Top 10% papers**) (\*Equal contribution.)
- TempSeg-GAN: Segmenting Objects in Videos Adversarially using Temporal Information**, *Saptakatha Adak* and Sukhendu Das, In 14th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISAPP part of VISIGRAPP), Prague, Czech Republic, 2019. [Oral]
- VidSeg-GAN: Generative Adversarial Network for Video Object Segmentation Tasks**, *Saptakatha Adak* and Sukhendu Das, In 11th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), Hyderabad, India, 2018. [Short Oral]
- Things at your desk: A Portable Object Dataset**, *Saptakatha Adak*, In 3rd International Conference on Computer Vision and Image Processing (CVIP), IIITDM, Jabalpur, India, 2018. [Oral] (**IAPR Best Student Paper Award**)

## RESEARCH PROJECTS

### 1. Video Object Segmentation

(December, 2017 - July, 2019)

<https://sites.google.com/view/iconip19-pixelgcn-vos/home> Indian Institute of Technology Madras

The complex problem of segmenting objects of interest in videos has gained importance as an interesting yet challenging task with recent advances in the field of deep learning. This problem has been dealt using convolutional models within a Generative Adversarial Network (GAN) framework. The proposed method uses a Patch-wise Symmetric Difference objective function for solving the problem. This was further improved by formulating temporal information based objective functions to maintain the consistency among the frames. In the later part, the challenge shifted from segmenting single object towards generating good quality segmentation maps for videos involving multiple objects with varying motion patterns. Towards this, a Directional Attention based Graph Convolutional Neural Network (GCNN) was proposed to understand the spatio-temporal relationships among different objects. A bi-directional estimation based aggregation function was incorporated to track objects undergoing occlusion.

#### Visible Output:

- VidSeg-GAN: Generative Adversarial Network for Video Object Segmentation Tasks*, In 11th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), Hyderabad, India, 2018.

- *TempSeg-GAN: Segmenting Objects in Videos Adversarially using Temporal Information*, In 14th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISAPP part of VISIGRAPP), Prague, Czech Republic, 2019.
- *Motion-based Occlusion-aware Pixel Graph Network for Video Object Segmentation*, In 26th International Conference on Neural Information Processing (ICONIP), Sydney, Australia, 2019 (*Best Student Paper Award*).

## 2. Semantic Segmentation for Autonomous systems in adverse scenarios (August, 2018 - March, 2019) *Indian Institute of Technology Madras*

A novel end-to-end trainable dual-channel network for segmenting traffic scenes in night-time images is proposed to facilitate the autonomous systems. Among the two channels, the former is trained in a supervised manner with style-transferred pseudo night-time images, whereas the latter uses a weakly-supervised domain adaptation technique to segment real night-time images with the knowledge from artificial domain (synthetic night images). The proposed method also uses a multi-scale patch based fusion technique to effectively incorporate information from both the channels of the framework.

### Visible Output:

- *What's there in the dark*, In 26th IEEE International Conference on Image Processing (ICIP), Taipei, Taiwan, 2019 (*Top 10% papers*).

## MISCELLANEOUS PROJECT

### Prediction of Box-Office Performance of Hollywood Movies (June - December, 2014) *Indian Statistical Institute, Kolkata*

Developed a model to predict the performance of Hollywood movies in Box-Office based on various hand-crafted features involving budget, income, actors-directors-crews involved, genre, time of release of the movie, etc. using decision tree-based classification techniques like Classification Trees and Random Forests. For this purpose, a Hollywood movie dataset was prepared from several internet-based sources. Extensive experiments were done to evaluate the model's predictive capability in anticipating critics' rating, monetary profits, and award-winning possibility of a movie.

## AWARDS

- Recipient of *Best Student Paper Award* in 26th International Conference on Neural Information Processing (ICONIP), Sydney, Australia, 2019.
- Selected among Top 10% papers for the paper entitled "What's there in the dark" presented in 26th IEEE International Conference on Image Processing (ICIP), Taipei, Taiwan, 2019.
- Recipient of *IAPR Best Student Paper Award* in 3rd International Conference on Computer Vision and Image Processing (CVIP), IIITDM, Jabalpur, India, 2018.
- Recipient of *Best Student Project Award* for Undergraduate Project on Cloud Computing presented by Tata Consultancy Services, 2017.

## SKILLS

- **Programming Languages:** Python, C, C++.
- **Applications and Tools:** PyTorch, Keras, Tensorflow, MATLAB, SQL, R, Android Studio.
- **Technologies:** Computer Vision, Machine Learning, Deep Learning.

## PROFESSIONAL SERVICE

- **Reviewer:** International Conference on Neural Information Processing (ICONIP), 2021.

## POSITIONS OF RESPONSIBILITY

- Part of the ground-truth creation team for the Mouse Brain Architecture Project jointly carried out under the Cold Springs Harbor Laboratory, USA and Indian Institute of Technology Madras (January 2017 - July 2018).
- Part of a team of organizers for the TCS Research Interaction Day 2016 at Indian Institute of Technology Madras (September 2016).
- Teaching Assistant for the Computer Vision (CS6350) course at the Department of Computer Science and Engineering in Indian Institute of Technology Madras (January 2019 - May 2019).
- Teaching Assistant for the Linear Algebra and Random Processes (CS6015) course at the Department of Computer

Science and Engineering in Indian Institute of Technology Madras (July 2018 - November 2018).

- Teaching Assistant for the Computational Engineering (CS1100) course at the Department of Computer Science and Engineering in Indian Institute of Technology Madras (July 2016 - November 2016).

## SCHOLASTIC ACHIEVEMENTS

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- Pan-India winner of the Samsung SMS Classification challenge in the Hack2Innovate hackathon (2017) and VIP invitee to the Global Entrepreneurship Summit 2017, Hyderabad, India.
- Second Runner-up in the Microsoft Code.Fun.Do 2017 held at the Indian Institute of Technology Madras.
- Among teams from India in the Microsoft Code.Fun.Do 2017 Finalists' Forum.
- Recipient of merit scholarship during B.Tech sponsored by Gateforum, India.

## REFERENCE

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- **Prof. Sukhendu Das**

**Professor**

sdas[at]iitm[dot]ac[dot]in

Department of Computer Science and Engineering

Indian Institute of Technology Madras

Chennai - 600036

Tamil Nadu, India

- **Prof. N.S. Narayanaswamy**

**Professor**

swamy[at]cse[dot]iitm[dot]ac[dot]in

Department of Computer Science and Engineering

Indian Institute of Technology Madras

Chennai - 600036

Tamil Nadu, India

## PERSONAL DETAILS

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- **Google Scholar:** <http://bit.ly/saptakatha-adak>
- **Researchgate:** [https://www.researchgate.net/profile/Saptakatha\\_Adak](https://www.researchgate.net/profile/Saptakatha_Adak)
- **DBLP:** <https://dblp.org/pid/242/1835>
- **LinkedIn:** [www.linkedin.com/in/saptakatha-adak/](http://www.linkedin.com/in/saptakatha-adak/)