

Siddhartha Gairola

E-mail: siddhartha.gairola18@gmail.com

Website: <https://sidgairola18.github.io>

Education

International Institute of Information Technology, Hyderabad Hyderabad, India

MS by Research in CSE 2018 - 2020

- Advisor: Prof. P. J. Narayanan
- Thesis: *Image Representations for Style Retrieval, Recognition and Background Replacement Tasks*
- CGPA: **9.75/10**

BTech with Honours in CSE 2014 - 2018

- CGPA: **8.91/10**

Work Experience

Microsoft Research, India - Research Fellow Aug 2020 - Present

- Working on problems in healthcare, computer vision and machine learning.

Microsoft Research, India - Research Intern Jan 2020 - Jul 2020

- Worked on building smartphone based diagnostic solutions for eye diseases using mobile computing, computer vision and machine learning.

Adobe Systems, India - Research Intern Jun 2019 - Jan 2020

- Worked in **Media and Data Science Research** (MDSR) lab with Balaji K and Mayur Hemani.
- Implemented a deep learning model in *Python, PyTorch* to perform **Few-shot Guided Segmentation** on images, beat the SOTA by 6%, published a paper and filed a patent for the same.

IIIT Hyderabad - Research Assistant May 2016 - May 2019

- Research student at the Center for Visual Information and Technology (CVIT)
- Worked with Prof. P. J. Narayanan on problems in computer vision, machine learning and deep learning.

IIIT Hyderabad - Teaching Assistant Aug 2016 - May 2019

- Teaching Assistant for graduate and undergraduate courses - *Digital Logic and Processors, Artificial Intelligence, Digital Image Processing, Computer Vision, and Graphics*.
- The duties involved taking regular tutorials, setting up assignments and conducting evaluations.

Google Summer of Code (GSoC) - Student Developer May 2018 - Aug 2018

- Was accepted as a developer for the Google Summer of Code Program for a 2nd time with Scilab org.
- Implemented a DEMO in C/C++ and Scilab as a working example for the MEX Library in Scilab.

Google Summer of Code (GSoC) - Student Developer May 2017 - Aug 2017

- Was accepted as a developer for the Google Summer of Code Program for the organization Scilab.
- Implemented a C/C++ wrapper for Matlab MEX-API on current API Scilab.

Patents

- **Siddhartha Gairola, Mayur Hemani, Ayush Chopra, Jonas Dahl, Balaji K. (2020), Improved Similarity Propagation for One-Shot and Few-Shot Image Segmentation (US 16/906,954).**

Peer-Reviewed Publications

- S. Gairola**, M. Bohra, N. Shaheer, N. Jayashankar, P. Joshi, A. Balasubramaniam, K. Murli, N. Kwatra, and M. Jain. SmartKC: Smartphone-based Corneal Topographer for Keratoconus Detection. *In Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, Volume 5, Issue 4, 2021.
- S. Gairola**, F. Tom, N. Kwatra, and M. Jain. [RespireNet: A Deep Neural Network for Accurately Detecting Abnormal Lung Sounds in Limited Data Setting](#). *43rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, 2021.
- S. Gairola**, A. Chopra, M. Hemani, Balaji K. [SimPropNet: Improved Similarity Propagation for Few-Shot Image Segmentation](#). *International Joint Conference on Artificial Intelligence (IJCAI)*, 2020.
- S. Gairola**, R. Shah, P. J. Narayanan. [Unsupervised Image Style Embeddings for Retrieval and Recognition Tasks](#). *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2020.
- V. Kumar*, D. Khattar*, **S. Gairola***, Y. K. Lal*, V. Varma. [Identifying Clickbait: A Multi-Strategy Approach Using Neural Networks](#). *The 41st International ACM SIGIR Conference on Research & Development in Information Retrieval*, 2018.
- S. Rawat*, **S. Gairola***, R. Shah, P. J. Narayanan. [Find Me a Sky: A Data-Driven Method for Color-Consistent Sky Search and Replacement](#). *International Conference on Multimedia Modeling (MMM)*, 2018.

Academic Achievements

- Awarded the **Dean's Research Award** for a paper published at an international conference while in undergraduate, 2018.
- Awarded the **Dean's List Award** for 6 semesters straight for being in top 10% of the class in Monsoon 2015, 2016, 2017 and Spring 2016, 2017, 2018.
- Qualified for the **ACM ICPC Asia Onsite Regionals** twice (2015, 2016).
- **All India Rank 2262 in JEE Advanced 2014 (98.5% percentile among 150,000 students).**
- **All India Rank 3856 in JEE Mains 2014 (99.7% percentile among 1.2 million students).**

Academic Service

Reviewer: ICLR 2022, IHCI 2021.

Selected Projects

Guided Few-Shot Segmentation: Implemented a deep learning system to perform few-shot image segmentation with guidance propagation using *Python and PyTorch*. *Monsoon 2019*

Unsupervised Style Learning: Implemented a deep learning model in *Python and PyTorch* to learn robust style representations without supervision. Achieved state-of-the-art results for this task and was accepted as a paper ([code](#)). *Spring 2019*

Sketching with Style: Implemented the paper Sketching with Style^b (*ICCV 2017*) in *PyTorch and Python* ([code](#)). *Monsoon 2018*

Movie Genre Classification: Implemented a deep learning model to predict the genres of a movie based on its poster, using *Python and TensorFlow*. *Monsoon 2017*

*equal contribution

^bJ. Collomosse, T. Bui, M. Wilber, C. Fang, and H. Jin. Sketching with style: Visual search with sketches and aesthetic context. In 2017 IEEE International Conference on Computer Vision (ICCV), 2017.

Wiki-Search Engine: Implementation of an efficient and scalable search engine on Wikipedia dump in *Python*. Retrieve top relevant documents based on input query. Handled field as well as phrase queries. Documents were re-ranked based on ‘tf-idf’ measure. For fast retrieval used threading and multi-level indexing. *Monsoon 2017*

High Dynamic Range Images: HDR imaging - generating images with a greater range of luminance levels than which can be achieved by taking only a single photograph with a fixed exposure. Using tone mapping, high-boost filtering and bilateral filtering for improvements. *Monsoon 2016*

Tic-tac-toe Bot: Designed an automated agent bot to play the a modified version of tic-tac-toe game. Using a minimax algorithm and alpha-beta pruning. *Spring 2016*

Technical Skills

Working Knowledge	Bash, C/C++, Python, Matlab, Octave, OpenCV, Android-SDK
Software & Tools	GNU/Linux, HTML, CSS, JavaScript, LaTeX, Excel
Deep Learning Frameworks	PyTorch, TensorFlow, Keras, Caffe
Past Experience	Java, OpenGL, WebGL, Django, Web2py

References

Prof. P. J. Narayanan, Director, IIIT-Hyderabad, India ([email](#))

Dr. Mohit Jain, Senior Researcher, Microsoft Research, India ([email](#))

Dr. Nipun Kwatra, Principal Researcher, Microsoft Research, India ([email](#))

Balaji Krishnamurthy, Principal Scientist, Adobe Systems, India ([email](#))

Mayur Hemani, Senior Research Scientist, Adobe Systems, India ([email](#))