

Siddhartha Gairola

E-mail: siddhartha.gairola18@gmail.com

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

Education

International Institute of Information Technology, Hyderabad <i>Dual Degree BTech and MS by Research in CSE</i> <i>CGPA: 8.98 /10</i>	Hyderabad, India 2014 - 2019
St. Joseph's Academy <i>Senior Secondary, ISC; Average: 93.6%</i> <i>Secondary, ICSE; Average: 95.28%</i>	Dehradun, India 2012 - 2013 2010 - 2011

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 <i>Python, PyTorch</i> 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 - <i>Digital Logic and Processors, Artificial Intelligence, Digital Image Processing, Computer Vision, and Graphics</i> . | |
| · 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 2 nd 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**).

Publications

In Submission

- **Siddhartha Gairola**, Murtuza Bohra, Nadeem Shaheer, Navya Jayashankar, Pallavi Joshi, Anand Balasubramaniam, Kaushik Murli, Nipun Kwatra, and Mohit 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.*

Peer-Reviewed Publications

- **Siddhartha Gairola**, Francis Tom, Nipun Kwatra, and Mohit 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.*
- **Siddhartha Gairola**, Ayush Chopra, Mayur Hemani, Balaji K. SimPropNet: Improved Similarity Propagation for Few-Shot Image Segmentation. *International Joint Conference on Artificial Intelligence (IJCAI), 2020.*
- **Siddhartha Gairola**, Rajvi Shah, PJ Narayanan. Unsupervised Image Style Embeddings for Retrieval and Recognition Tasks. *IEEE Winter Conference on Applications of Computer Vision (WACV), 2020.*
- Vaibhav Kumar*, Dhruv Khattar*, **Siddhartha Gairola***, Yash Kumar Lal*, Vasudev Varma. Identifying Clickbait: A Multi-Strategy Approach Using Neural Networks. *The 41st International ACM SIGIR Conference on Research & Development in Information Retrieval, 2018.*
- Saumya Rawat*, **Siddhartha Gairola***, Rajvi Shah, PJ 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: International Conference on Learning Representations (ICLR), 2022; India-HCI (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*

*equal contribution

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*

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](#))

^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.