

University of Georgia,  
Athens, GA,  
USA

## Kushajveer Singh

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### Skills

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- Computer Vision, Graph Machine Learning, Neural Networks, Deep Learning
- Proficient: PyTorch, PyTorch Geometric, detectron2, numpy, Python
- Exposure: Tensorflow, Dask, Deep Graph Library
- Other: matplotlib (used pyplot), pandas (used for basic table handling)

### Education

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- **University of Georgia** – Athens, GA, USA *January 2021 – Present*  
*M.S. (Thesis) in Computer Science (expected July 2022)*
- **Punjab Engineering College** – Chandigarh, India *August 2016 – July 2020*  
*B.Tech. in Electronics and Communication Engineering CGPA: 7.0/10*

### Projects

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- Won Techgig CodeGladiators 2019 out of 15 teams selected *July 20-23, 2019*  
across India through 3 rounds of screening (Artificial Intelligence theme)  
Developed a parking space detection system using PyTorch. Developed a self-supervised technique to build the system without any parking space specific data.
- Implemented ‘Semantic Image Synthesis with Spatially-Adaptive *April, 2019*  
Normalization’ paper by Nvidia from scratch using PyTorch  
Open-sourced the first public implementation of the paper.
- Reproduced research in cyclic learning and superconvergence *June, 2019*  
Investigated the convergence of training using cyclic learning and how to select good hyperparameter values by analyzing validation loss plots.
- Tested Mish activation function in case of transfer learning *Nov, 2019*  
Compared Mish with ReLU and Swish activation functions and found Mish produced a smoother loss function and improves generalization.
- Made an 8-bit computer on breadboard. Implemented Add, *Feb, 2017*  
Subtract logic using NAND chips along with memory modules

### Additional Experience

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- Maintain a blog. Some of the recent posts include.
  - What can neural networks reason about? *Nov 7, 2020*
  - ImageNet Dataset Advancements *Aug 31, 2020*
  - Deep Learning Model Initialization in Detail *Jul 10, 2020*
- Made open-source contributions to PyTorch, torchvision, fastai
- Paper reviewer and presentation judge at Georgia Junior Science & Humanities Symposium (GJSHS)
- Represented Chandigarh (India) at the North-Zone regional finals in IT Software Solutions for Business in IndiaSkills competition

### Languages

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- English - Fluent
- Punjabi – Native
- Hindi - Conversational