





# Abhay Singh

contact	✉ as2626@cornell.edu ☎ (404) 353-0477	in linkedin.com/in/as2626 github.com/as2626
education	<b>Cornell University</b> , Ithaca, NY B.S. in Computer Science, GPA: 4.15/4.00	Aug 2018 – May 2022
relevant coursework († = teaching assistant)	CS 6670: Computer Vision, CS 4780: Machine Learning <sup>†</sup> , CS 4120: Compilers, CS 4820: Algorithms <sup>†</sup> , CS 5414: Distributed Systems, CS 4410: Operating Systems, MATH 4130: Analysis I (Honors), CS 4850: Mathematical Foundations, MATH 2940: Linear Algebra, BTRY 3080: Probability & Inference, CS 3110: Functional Programming, CS 3410: Systems Programming	
experience	<b>Yext</b> , New York, NY <i>Software Engineering Intern</i> <ul style="list-style-type: none"><li>Working on all-things security, including static code analysis over the entire codebase</li></ul> <b>Cornell University Vision and Learning</b> , Ithaca, NY <i>Undergraduate Researcher</i> <ul style="list-style-type: none"><li>Working on learning over sets and graphs for relational reasoning</li></ul> <b>Morgan Stanley</b> , New York, NY <i>Technology Summer Analyst</i> <ul style="list-style-type: none"><li>Architected and implemented end-to-end data pipeline to process and analyze over 800,000,000 entries of financial data daily with highly optimized, parallelized Python scripts</li><li>Reduced mainframe consumption by 90%, from 5000 to 500 CPU-seconds, saving tens of millions of dollars in annual costs</li><li>Created and deployed firm-wide DevOps web tool to analyze large text-based datasets</li></ul> <b>Cornell Unmanned Air Systems</b> , Ithaca, NY <i>Vision Lead</i> <ul style="list-style-type: none"><li>Designed and implemented custom object detection and classification model (Mask R-CNN variant with multi-head output) in multi-task learning setting on collected aerial imagery dataset</li><li>Lead all computer vision tasks on team, with individual efforts directly increasing classification task accuracy by 32% and object detection mAP IoU by over 80%</li></ul> <b>Data Science for India</b> <i>Instructor &amp; Curriculum Developer</i> <ul style="list-style-type: none"><li>Developed introductory data science course for over 400 students of 11 Jupyter notebooks to manipulate, visualize, and analyze useful data from large datasets using NumPy, pandas, and matplotlib</li></ul>	May 2020 – Aug 2020 Sept 2019 – present June 2019 – Aug 2019 Oct 2018 – present July 2017 – Oct 2017
preprints & publications	<b>Better Set Representations For Relational Reasoning</b>  (ICML 2020 OOL Workshop) Qian Huang, Horace He, Abhay Singh, Yan Zhang, Ser-Nam Lim, and Austin Benson	
projects	<b>Few-Shot Clustering Instance Segmentation (FS-CIS) Net</b>  <ul style="list-style-type: none"><li>Designed novel neural network architecture to perform proposal-free few-shot instance segmentation, showcasing results in graduate-level course, CS 6670: Computer Vision</li><li>Validated approach on PASCAL-5i dataset, showing comparable performance to Mask R-CNN inspired methods with significant speedups</li></ul> <b>Xi Compiler</b> <ul style="list-style-type: none"><li>Wrote optimized compiler in Scala for language Xi, to produce x86 assembly in team of 4</li><li>Includes lexing, parsing, type-checking, generating intermediate code, various optimizations including dataflow analysis, and emitting assembly instructions with non-trivial register allocation</li></ul> <b>CamelTrouble</b>  <ul style="list-style-type: none"><li>Created real-time multiplayer browser game in OCaml, transpiled to JavaScript, in team of 3</li><li>Implemented procedural map generator that randomly creates valid maps to play on</li><li>Programmed user events and class abstractions: unifying model, controller, and view in MVC design</li></ul> <b>Virtual Stock Market</b>  <ul style="list-style-type: none"><li>Deployed RESTful web app in Python using Flask that simulates stock market trading with live prices and paper money, storing transactions with SQL database</li></ul>	
languages & technologies	Python, Java, OCaml, Scala, Go, C/C++, Bash, JavaScript, HTML/CSS, SQL PyTorch, Keras/TensorFlow, Git, Gradle, Flask, Docker	