

# Abhay Singh

contact	✉ as2626@cornell.edu ☎ (404) 353-0477		in <a href="https://www.linkedin.com/in/as2626">linkedin.com/in/as2626</a> 🐙 <a href="https://github.com/as2626">github.com/as2626</a>
education	<b>Cornell University</b> , Ithaca, NY B.S. in Computer Science, GPA: 4.15/4.00 Aug 2018 – May 2022		
coursework	CS 6670: Computer Vision      CS 4780: Machine Learning <sup>†</sup> CS 4820: Algorithms <sup>†</sup> * = in progress      CS 4410: Operating Systems      CS 4850: Math Foundations † = teaching assistant      MATH 4130: Analysis I (Honors)*      MATH 4315: Linear Algebra*      CS 3110: Functional Programming BTRY 3080: Probability      CS 3410: Systems Programming      CS 2110: Data Structures & OOP		
experience	<b>Yext</b> , New York, NY <i>Software Engineering Intern</i> May 2020 – Aug 2020 <ul style="list-style-type: none"><li>Designed and integrated static code analysis tool used firm-wide on over 80% of codebase to scan vulnerable Java code at compile-time</li><li>Wrote multi-threaded Golang script to determine unprotected customer apps that downloads and parses terabytes of API log data on-the-fly via AWS S3, and makes remote-procedure calls to fetch app data by API key; improved performance by 4x relative to previous solution</li><li>Integrated webhooks to automate modification of company repository permissions using Github's REST API, notifying teams automatically via Slack and email</li></ul> <b>Cornell University Vision and Learning</b> , Ithaca, NY <i>Undergraduate Researcher</i> Sept 2019 – present <ul style="list-style-type: none"><li>Conduct research on learning representations of sets and graphs for robust performance on relational reasoning tasks, aiming for publications at top conferences</li></ul> <b>Morgan Stanley</b> , New York, NY <i>Technology Summer Analyst</i> June 2019 – Aug 2019 <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, using NumPy and Pandas</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>Computer Vision and DevOps Lead</i> Oct 2018 – present <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, in PyTorch</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>		
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 few-shot 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, in team of 4; approximately 10,000 lines of code</li><li>Includes lexing, parsing, type-checking, intermediate code generation, 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, Docker, Bazel, Gradle, Terraform		