

Abhay Singh

contact	✉ as2626@cornell.edu ☎ (404) 353-0477		in linkedin.com/in/as2626 🐙 github.com/as2626
education	Cornell University , 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 [†] CS 4820: Algorithms [†] * = in progress CS 5414: Distributed Systems* CS 4410: Operating Systems CS 4120: Compilers † = teaching assistant CS 4850: Math Foundations CS 3110: Functional Programming CS 2110: Data Structures & OOP MATH 4130: Analysis I (Honors)* MATH 2940: Linear Algebra BTRY 3080: Probability		
experience	Yext , New York, NY <i>Software Engineering Intern</i> May 2020 – Aug 2020 <ul style="list-style-type: none">Designed and integrated static code analysis tool used firm-wide on over 80% of codebase to scan vulnerable Java code at compile-timeWrote 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 solutionIntegrated webhooks to automate modification of company repository permissions using Github's REST API, notifying teams automatically via Slack and email Cornell University Vision and Learning , Ithaca, NY <i>Undergraduate Researcher</i> Sept 2019 – present <ul style="list-style-type: none">Conduct research on learning representations of sets and graphs for robust performance on relational reasoning tasks, aiming for publications at top conferences Morgan Stanley , New York, NY <i>Technology Summer Analyst</i> June 2019 – Aug 2019 <ul style="list-style-type: none">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 PandasReduced mainframe consumption by 90%, from 5000 to 500 CPU-seconds, saving tens of millions of dollars in annual costsCreated and deployed firm-wide DevOps web tool to analyze large text-based datasets Cornell Unmanned Air Systems , Ithaca, NY <i>Computer Vision and DevOps Lead</i> Oct 2018 – present <ul style="list-style-type: none">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 PyTorchLead all computer vision tasks on team, with individual efforts directly increasing classification task accuracy by 32% and object detection mAP IoU by over 80%		
publications	Better Set Representations For Relational Reasoning 📄 🐙 (ICML 2020 OOL Workshop) Qian Huang, Horace He, Abhay Singh, Yan Zhang, Ser-Nam Lim, and Austin Benson		
projects	Few-Shot Clustering Instance Segmentation (FS-CIS) Net 📄 <ul style="list-style-type: none">Designed novel neural network architecture to perform proposal-free few-shot instance segmentation, showcasing results in graduate-level course, CS 6670: Computer VisionValidated approach on PASCAL-5i dataset, showing comparable performance to few-shot Mask R-CNN inspired methods with significant speedups Xi Compiler <ul style="list-style-type: none">Wrote optimized compiler in Scala for language Xi, in team of 4; approximately 10,000 lines of codeIncludes lexing, parsing, type-checking, intermediate code generation, various optimizations including dataflow analysis, and emitting assembly instructions with non-trivial register allocation CamelTrouble 🐙 <ul style="list-style-type: none">Created real-time multiplayer browser game in OCaml, transpiled to JavaScript, in team of 3Implemented procedural map generator that randomly creates valid maps to play onProgrammed user events and class abstractions: unifying model, controller, and view in MVC design Virtual Stock Market 🐙 <ul style="list-style-type: none">Deployed RESTful web app in Python using Flask that simulates stock market trading with live prices and paper money, storing transactions with SQL database		
languages & technologies	Python, Java, OCaml, Scala, Go, C/C++, Bash, JavaScript, HTML/CSS, SQL PyTorch, Keras/TensorFlow, Git, Docker, Bazel, Gradle, Terraform		