# Mingda Du

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## Education

**M.S. in Computer Science, New York University, Tandon, New York, NY** Expected May 2019

**B.S. in Computer Science, Northeastern University at Qinhuangdao, China** Jun 2017

## Technical Skills

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|---|---|
| **Languages** | C/C++, Javascript, Python, Java, HTML/CSS, PHP, SQL, Shell, Scala, JSON, C# |
| **Web Development** | Node.js, PostgreSQL, MySQL, jQuery, SQL Server |
| **Knowledge/Skills** | Algorithms, AWS, Hadoop, Spark, Computer Vision, Data Analysis, Game AI Strategy, Docker, Cryptography, Network Security, RISC-V CPU |

## Experience & Projects

- **Fitness Web App** Nov 2018 - Dec 2018
  - Developed a scalable web app to find nearby gyms, keep a log of user details and health stats each day after workout, analyze user's workout data over a period of time and visualize it.
  - Host website on AWS S3, use Cognito to secure user log in and sign up. Use API Gateway to access AWS services, with authentication of IAM Roles and API Key. Get nearby gyms using Yelp API.
  - Implement a chatbot to acquire user information and store data through SQS to DynamoDB. Fetch data/analysis from DynamoDB and visualize it in the frontend using Highcharts.
  - Lambda using Node.js, frontend using HTML/CSS and Javascript.
- **Smart Photo Album** Oct 2018 - Nov 2018
  - Developed an intelligent photo album web app with better security, for uploading user photos and fetching photos with user's natural language request.
  - Store photos in S3. Build VPC for Lambda functions and Elastic Search Service in same security group.
  - Use AWS Rekognition to identify objects in photos and store their tags in Elastic Search Service (ES).
  - Use AWS Lex to parse user request to generate keywords and search them in ES. Show photos in frontend.
- **NYPD Traffic Collisions Data Analysis** Nov 2018 - Dec 2018
  - Developed a program in Zeppelin Notebook using SparkSQL to analyze data and gave meaningful suggestions of police force deployment by time/streets and road infrastructure examination, etc.
  - Designed an architecture of generating report(SparkSQL) automatically for a certain period (eg. every month/week), fetching data from NYC Open Data and using AWS services (EMR, EC2, Cloudwatch).
- **Traffic Measuring** Apr 2018 - May 2018
  - Worked in the team, developed a tool in MATLAB to measure the traffic of the given video.
  - Implement Lucas-Kanade Optical Flow algorithm to detect moving pixels.
  - Segment pixels and draw boxes on detected connected component for counting cars.
  - Optimize algorithms in MATLAB and result in a smooth video with good user interface detection feature.
- **Smooth Image Blending** Apr 2018 - May 2018
  - Developed a tool in MATLAB to smoothly stitching two images soft with no seams.
  - Use a designed mask window to combine Gaussian Pyramid and Laplacian Pyramid of two pictures.
- **Undergraduate Dissertation, A Searchable Encryption Algorithm Based on Bilinear Pairing and Predicate Encryption** Feb 2017 - Jun 2017
  - Created and implemented a model based on Bilinear Pairing Elliptic Curve Encryption and predicate encryption, enabling serial queries with predicates, using PBC Lib, GMP Lib and OpenSSL Lib.
- **Connect6 AI, University Computer Games Championship & National Computer Games Tournament, Team Member** Feb 2015 - Sep 2015
  - Won First Prize in the competition. Designed and implemented an AI program in C++, able to make competitive moves swiftly during the game, with Searching Module and Evaluation Module.
  - Finely designed data structure, systemized knowledge base, hash-table-stored chessboard situations, recording every move for future researching and evaluation learning; optimized algorithms.
  - Developed accelerated Threaten-Space Search (TSS) method including special pruning method to increase efficiency while searching and remove failure moves. Decreased time cost.
  - Designed hierarchical evaluation model dividing connection patterns by constraint inequalities. Leveraged learning method to enhance model and provide more accurate decision making.