

# KARL NORTHROP

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## EDUCATION

### Master of Science

#### Computer Science

Georgia Institute of Technology

Jan 2020 – Present

4.0 GPA

### Graduate Certificate

#### MS Computer Science

#### Foundations

Kennesaw State University

awarded May 2019

4.0 GPA

### Bachelor of Science

#### Chemical Engineering

Texas A&M University

summa cum laude, May 2012

3.94 GPA

## EXPERIENCE

### Project & Process Engineer

#### Audubon Engineering

Jun 2017 – Jun 2020

Houston, TX

### O&G Technology Consultant

#### OTM Technology

Dec 2016 – Apr 2017

Houston, TX

### Process Engineer

#### W.S. Nelson

Sep 2012 – Nov 2016

Houston, TX

## GRADUATE COURSEWORK

### GaTech

Software Arch. & Design (current)

Machine Learning for Trading

Artificial Intelligence for Robotics

Software Development Processes

### KSU

Data Structures & Algorithms

Computer Arch & Operating Systems

Foundations of Programming

Mathematical Structures for C.S.

Database Design

[knorth.dev](http://knorth.dev)

[github.com/karlnr](https://github.com/karlnr)

[linkedin.com/in/karlnorthrup](https://linkedin.com/in/karlnorthrup)



## SUMMARY

Chemical Engineer and C.S. graduate student seeking software development role applying highly transferable engineering experience solving complex problems across disciplines.

Proven ability to deliver successful project engineering outcomes operating within often disjoint industry standards, project specifications, and client requirements.

## PROJECTS

### CHEMICAL ENGINEERING | HIGHLIGHTS

#### Ethylene Terminal Expansion & Facility Restart

- Led process engineering effort from initial design thru Issue for Construction for major underground well storage facility & transfer terminal expansion
  - increased overall production capacity by 35 %
- Spearheaded process research and development to identify and redesign key equipment & operational deficiencies requiring remediation
  - delivered +/- 10% design package and capital estimate for planned \$25 million restart

#### Offshore Separator for BP & Shell Chemical

- Delivered 17,000 barrel/day three-phase oil & gas separator for joint stakeholder effort from initial sizing and detail design to final shop inspection
  - augmented platform throughput providing \$600k per day in added revenue

### SOFTWARE DEVELOPMENT | ACADEMIC

#### Machine Learning Stock Trader

#### Python, Pandas, Numpy, pytest

- Designed APIs implementing regression & classification learning models using Decision Tree, Random Forest, and Bagging algorithms to deploy strategy learners
- Performed statistical analysis on time-series data to calculate rolling statistics on dataframes and plot technical indicators
- Manipulated financial data by reading CSV files for multiple stocks & slicing, normalizing, and plotting calculated portfolio metrics
- Created a custom technical indicator to identify buy and sell opportunities and a market simulator to test trading strategies versus a benchmark

#### JobRank Android App

#### Java, SQLite, JUnit

- Deployed agile development practices to design & develop a mobile app for ranking and comparing job offers with a comparison management control panel
- Collaborated via git and Github to implement and iterate on project design and testing frameworks to satisfy user requirements

#### TextModifier Utility & Library

#### Java, JUnit

- Wrote a command-line application allowing a user to specify a text file and multiple arguments to manipulate file contents with options to sort, trim, add prefixes, and add/remove lines containing a substring
- Developed a java library version of the application to allow other software packages to interface with the utility
- Utilized a Test Specification Language to evaluate code coverage and develop a testing harness ensuring expected return values and protections against unsupported user input remained consistent across the development cycle

### DATABASE APPLICATIONS | FREELANCE

#### Material Test Report Catalog, Thomas Repro

#### MS Access, SQL

- Document retrieval application with multiparameter search interface for locating inventory using any combination of report fields

#### Inspection Management, DB Cranes

#### MS Access

- Normalized and migrated data from a Lotus installation containing decades of inspections to a relational database with data consistency and atomic transaction principles enforced