

# RYAN TATTON

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Cleveland, OH

## EDUCATION

### Case Western Reserve University

Cleveland, OH

*M.S. Computer Science candidate, B.S. Computer Science (secondary major), B.S. Biomedical Engineering* Expected Fall 2022

- Relevant coursework: Machine Learning, Sequential Decision Making, Probabilistic Graphical Models, Natural Language Processing, High-Performance Computing, Advanced Algorithms, Intro to Data Structures, Software Engineering, Theoretical Computer Science, Linear Algebra, Discrete Mathematics, Multivariable Calculus, Intro to Operating Systems, Data Privacy, Sequential Decision Making

## WORK EXPERIENCE

### Amazon.com, Inc. (Tax Services)

Seattle, WA

*Software Development Engineer Intern*

May – Aug 2020, May – Aug 2021

- Designed an extensible Java library that utilizes Amazon DynamoDB to prevent version conflicts during cross-region database replication that previously cost several weeks of development time to resolve.
- Implemented a deployment pipeline using TypeScript, AWS AppConfig, and AWS CDK to streamline the workflow of modifying, reviewing, deploying, and rolling back application configuration changes.
- Provided well-written technical documentation and thorough oral presentation to demonstrate the value of the developed software to project stakeholders.

### ShareTrace

Cleveland, OH

*Software Engineer and Researcher*

May 2020 – present

- Developed the Python-based AWS computing backend of the ShareTrace mobile app that analyzes user symptoms and indirect contact with other users to determine risk of infection. Source code: [github.com/rtatton/ShareTrace](https://github.com/rtatton/ShareTrace).
- Development tools include AWS Lambda, Amazon EMR, Amazon S3, Apache Giraph, Jackson, NumPy, Ray, and Joblib.
- Tatton, R., Ayday, E., Yoo, Y., & Halimi, A. (2021). ShareTrace: Privacy-preserving contact tracing with parallel message passing. *ACM Transactions on Spatial Algorithms and Systems*. Submitted for publication.

### Hesiod Financial, LLC

Cleveland, OH

*Software Engineer*

Oct 2018 – Jan 2020

- Implemented a Flask-based web app using Scikit-learn and Plotly Dash to configure and train machine-learning models to improve portfolio performance. Source code: [github.com/Hesiod-Labs/ai.ML](https://github.com/Hesiod-Labs/ai.ML).
- Programmed an internal Java accounting library to securely manage firm transactions using blockchain. Source code: [github.com/Hesiod-Labs/Project-Luca](https://github.com/Hesiod-Labs/Project-Luca).

## ACADEMIC PROJECTS

### connect.fm: Personalized Music Recommendation Android Mobile App

Cleveland, OH

*Computer Science Senior Capstone Project*

Feb – May 2021

- Researched and implemented a scalable, context-aware recommender system using a Dirichlet process mixture model and personalized near-neighbor ancestral sampling. Source code and documentation: [github.com/connectfm/cfm](https://github.com/connectfm/cfm).
- Designed the serverless cloud architecture for storing user data and generating recommendations.
- Tools: Python, Redis, Amazon Elasticache, AWS Lambda, Amazon DynamoDB, AWS Amplify, Tensorflow.

### Wearable Stress Measurement System

Cleveland, OH

*Biomedical Engineering Senior Capstone Project*

Feb – May 2021

- Reviewed machine learning literature to determine an appropriate technique for predicting ICU patient stress according to user needs and technical specifications.
- Implemented a deep reconstruction classification neural network to predict ICU patient stress in an unsupervised manner using Keras. Source code: [github.com/rtatton/ebme380](https://github.com/rtatton/ebme380).

### Personalized Truck Rental Service

Cleveland, OH

*Digital Innovation Course*

Jan – Apr 2020

- Researched and proposed to Penske Truck Leasing Co., L.P. a novel deep-learning-based approach to improve the personalization of their consumer truck rental services.
- Implemented a unique vehicle-routing algorithm using Google OR-Tools to satisfy customer requirements.

## EXTRACURRICULARS

### Discussions, Undergraduate Research Journal

Cleveland, OH

*Director of Review (Aug 2019 – Apr 2021), Copy Editor (Aug 2017 – Nov 2018)*

Aug 2017 – Apr 2021

- Reviewed and revised 32 undergraduate research articles for fall and spring publications.
- Created formal documentation that explains the review process and guidelines.

### Varsity Cross Country Team

Cleveland, OH

Aug 2017 – Sep 2019