



# Vikram Thirumalai

[My LinkedIn](#)[My GitHub](#)

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MSc. Computer Science | 1+ Years of Experience

Aug. 2018 – Dec. 2022

## Work Experience

### Amazon Music, Software Development Engineer Intern

May. – Aug. 2022

#### Resume Playlist Listening Experience

- Introduced a feature that resumes a customer's playlist listening experience on Alexa and Amazon Music when "Alexa, Play Music/Playlist" is requested.
- Used **AWS Lambda**, **SQS** and other internal services to set up the infrastructure to generate and store resume points for a customer.
- Improved UPL (user perceived latency) by ~15-20 ms when resuming customer experience by making asynchronous/parallel **RPC** calls to relevant services using the **CompletableFuture API** in **Java**.

### Happiest Minds Technologies, Machine Learning Intern

May – Aug. 2021

#### CCTV surveillance automation and Content Based Image Retrieval

- Created a use-case for **action recognition** models in automating CCTV surveillance. Developed a model using **3D Convolutional Neural Networks** (3D CNN) on **Pytorch**. Achieved 90% accuracy in detecting anomalous behavior from videos. Minimized the processing time per video to 1.5 seconds on a CPU.
- Built a **Content Based Image Retrieval System** to recommend and recover images of similar e-commerce products. System utilized a **Convolutional Autoencoder** backbone for feature extraction coded on Python. Used **ANNOY** to build an index and retrieve images with an 81% top-5-accuracy. Reduced retrieval time per image by 12.5 % on a single-core CPU.

### UNC Department of Computer Science, Teaching Assistant

Jan. - Dec 2022.

- Maintained and added front-end and back-end features to a **closure** codebase for a class management website that allows students to take programming tests and assignments online and receive feedback immediately.
- Created **API** endpoints in **closure** to enable different levels of user privilege and used **POSTGRESQL** to manage the data required by the application.
- Collaborated with the Professor to grade, evaluate and assist with creation of homework assignments.

## Research Experience

### UNC Department of Computer Science, Research Assistant

Oct. 2019.- Dec 2022

#### Source Code Similarity Detection

- Curated a dataset comprised of programming solutions from university coursework. Implemented a software clustering algorithm using **Normalized Compression Distance** and **Winnowing**, which resulted in a 98% accuracy in clustering student solutions in the dataset. The algorithm's effectiveness in categorizing large volumes of programming solutions reduces need for manual evaluations by 80%+.
- Collaborated with a team of researchers to build an **educational machine learning software** that aids students with assignments by recommending potential solutions to errors gathered from similar past data. Reduced amount manual intervention required by enabling faster debugging of programs.

## Personal Projects [\(My GitHub\)](#)

### Melanoma Detection

May 2020

- Conducted a survey on the performance of **CNNs** and **SVMs** on the task of **detecting malignant melanoma** from images of moles. Developed the candidate models using **Pytorch** and **Sklearn**. The CNN out-performed the SVM and achieved an accuracy of 86.52%.

### Online Multiplayer Chess

Jun. 2020

- Built a website that enables users to create an account, view their game history and play chess with friends online. Used **React** and **Semantic UI** on the frontend and **Express**, **MySQL** to develop the **REST API** and database. Facilitated online play with the help of **socket.io**.

### Distributed Map Reducer to Find Mutual Friends on Facebook

Feb. 2021

- Used **Java's RMI** (Remote Method Invocation) package and **Threads** to write a distributed software that leverages the **Map Reduce**, **Model View Controller**, and **Factory** design patterns to find mutual friends among a group of Facebook users.

## Education



**Master of Science,**  
Computer Science;  
UNC-Chapel Hill;  
Jan. 2022-Dec. 2022

**Bachelor of Science,**  
Computer Science (Primary),  
Statistics(Secondary);  
UNC-Chapel Hill;  
Aug 2018-Dec.2021

**GRE:**330

**Dean's List:** All semesters

**MSc. GPA:** 4.0

**BSc. Major GPA:** 3.91

**BSc. CGPA:** 3.87

**Clubs:** Carolina Analytics and  
Data Science

## Technical Skills



**Languages:** Java, Python,  
C, R, JavaScript, CSS,  
HTML, SQL, Octave,  
MATLAB, C, Prolog;

**Frame Works:** MongoDB,  
Pytorch, TensorFlow,  
React.js;

**OS:** Windows, Linux;

**Other tools:** Git, GitHub,  
Tableau, AMPL;

## Course Work



Operating Systems, Computer  
Security, Machine Learning,  
Distributed Systems,  
Algorithms and Analysis, Web  
Programming, Data  
Structures, Internet Services  
and Protocols.