

# PRABHAV KHERA

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## Technical Skills

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**Languages:** Python, JavaScript, TypeScript, Java, C, HTML/CSS, C++, C#, Swift, Racket, Haskell

**Developer Tools:** Postman, Git, Docker, Firebase, Heroku, Netlify, Vercel, Azure

**Technologies/Frameworks:** ReactJS, NextJS, NodeJS, ExpressJS, Flask, Spring-Boot, NumPy, Pandas, Matplotlib, .NET 6.0, Scikit-Learn, Figma

## Experience

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### Midnight Sun

March 2022 – Present

*Project Manager - Strategy Sub-team*

*Waterloo, Ontario*

- Leading the **optimization team**, building a solar car, to help improve vehicle performance with scientific models.
- Designed the **power budget** of the vehicle by collaborating with Hardware and Mechanical sub-teams, thus collecting all of the necessary data for Strategy to develop the optimization model.
- Led **solar array testing** to help strategy team formulate the data we need for optimization.

### Mon Amour

June 2021 – August 2021

*Front End Developer Intern*

*Delhi, India*

- Developed the front-end of the company website from scratch using **ReactJS** involving **dynamic routing** to product pages and creating designs using React-Slick and Material UI.
- Incorporated a filter functionality on the site's search service to allow **30% users** to have improved search results.
- Simplified **end-user tax management** by determining the most cost-effective APIs that reported user location, and presented it to upper management.

## Projects

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### 🔗 SentimentSongs | *Scikit-Learn, Flask, Pandas, Numpy, NextJS (TypeScript), Librosa, Spotipy, Spotify-API*

- Developed a web-app in **NextJS** and **MantineUI** that takes in user speech and based on their mood adds a playlist to the Spotify account of the user.
- Developed a model using Scikit-Learn's **MLPClassifier** that uses the audio features extracted by **librosa**, to run at an accuracy of **96.56%**.
- Built a Flask-backend that authenticates the user using **Spotify API** to get access to their top artists and tracks.
- Implemented a **custom algorithm** using valence, danceability, and energy in the backend to create playlists from the user's favourite tracks and artists.

### 🔗 UnKnown - Chat with Strangers | *Spring Boot(Java), WebSockets, Android Studio(Kotlin), Express, Flask, Redis*

- Created a **Kotlin-based Android application** in **Android Studio** that allows users to talk people in their *geographical proximity*.
- Developed a backend based on **SpringBoot** and **WebSockets**, following the **MVC architecture** in order to implement the *chatting functionality*.
- Ensured security by using an **express server with TypeScript** (connected to SpringBoot), which utilized the **JWT (JSON Web Token)** and **Bcrypt Hashing** (in MongoDB).
- Used **Flask** to create a custom algorithm based on data from **Google Maps API** (stored in **Redis**) to find users and access temporary chats very efficiently with *in-memory caching*.

### 🔗 Vision — A Search Engine | *Python, BeautifulSoup, MERN Stack, NextJS, TailwindCSS*

- Programmed a **web crawler** which uses a **Breadth-First Search** to crawl, following the ethical obligations of the robots.txt file to ensure no banned routes are crawled.
- Developed a **custom indexing algorithm** which analyzes word count and assigns them priority from data in **MongoDB** including the number of times a website has been crawled.
- Optimized search time from 2 sec to run within 10 ms, further **reducing it by 85%** using the indexing algorithm.
- Designed the front-end using **NextJS** and **TailwindCSS** that is connected to an **Express server** that serves as the backend.

## Education

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### University of Waterloo

Sep. 2021 – Present

*Candidate for Bachelor of Computer Science, 2A term*

*Waterloo, Ontario*

- **GPA: 3.97**
- Won **2nd Place** among **609 participants** at **Def Hacks 3.0**, a global hackathon held in June 2021.
- Served as a **Computer Science Representative** at the Mathematical Society.