

Raghav Kaul

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TECHNICAL SKILLS

Languages: Proficient: Python, C++, SQL, PostgreSQL; Prior Experience: Java, JavaScript, R, Scala

Libraries/Frameworks: NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn, Keras, OpenCV, NLTK, Spark, PyTorch

Misc: **Tools:** Git, GitHub, Bash, Tableau, MS Excel, AWS ([cert](#)), Colab, Linux, Agile; **Web:** HTML5/CSS3, WordPress, Flask, Postman

WORK EXPERIENCE

Software Engineer, Sun Produce Cooperative, Tempe, Arizona

Jun 2021 – Present

- Designing a fully automated system that allows both Producers to update their weekly produce and Buyers to place an order for produce, saving 40+ person-hours per week.
- Leading the website redesign project in WordPress by migrating content from Gutenberg to Elementor, improving user experience.

Graduate Teaching Assistant, 'Principles of Programming Languages', ASU, Tempe, Arizona

Jan 2021 – May 2021

- Responsibilities included holding office hours, writing flawless project solutions, and grading submissions for 150+ students.

Development Intern, Aeeice, Inc, Tempe, Arizona

Jun 2020 – Aug 2020

- Launched an online museum with Augmented reality and 3D viewing experiences using Apple's WebKit and Divi in WordPress.
- Built and integrated a responsive 3D-model viewer using three.js and jQuery that showcased museum sculptures interactively.
- Resolved 2 server-side/client-side issues concerning multiple user logins and user disconnection for a RESTful captive portal.

Data Science Intern (Computer Vision), Decimal Technologies, Gurugram, India

Jan 2019 – May 2019

- Led a team of 2 in developing an Optical Character Recognition (OCR) scanner that extracted text data from 4 identity documents.
- Applied image and text processing techniques such as automatic cropping, image transformation, and RegEx, considerably improving the OCR engine's performance. Tested application on 15+ document samples obtaining an accuracy of 90.48%.
- Deployed the service as a serverless web application on AWS Lambda using Flask and Zappa, allowing users to upload images and view the extracted text as a JSON response.

PROJECT EXPERIENCE

Named Entity Recognition and Classification (Python, ngrok, React.js, Named Entity Recognition, NLP)

Jan 2021 – Apr 2021

- Engineered a full-stack application to display named entities (person, place, organization) from a given text. Trained 5 NLP models on the CoNLL-2003 dataset achieving highest micro and macro f1 scores of 0.961 with BERT and 0.896 with BERT+CRF resp.
- Managed a team of 7 in the design and development of frontend and backend modules. Wrote 4 React components for the user interface and devised a trained model API using flask-ngrok that omitted any server-side costs.
- Utilized Chart.js to display the total number of predicted entities and types of entities between each model for added model insight.

Covid-19 Health Monitoring Application (Java, Android Studio, XAMPP, Mobile App Development) ([demo](#))

Sep 2020 – Dec 2020

- Designed an Android application that measured a user's heart rate and respiratory rate using mobile sensors. The app allowed users to log and track 10 Covid-related symptoms and send information to medical professionals.
- Wrote a peak detection algorithm that calculated heart rate and respiratory rate within 30s by analyzing the variation in red pixels and accelerometer sensor data, respectively.

Analysis of Amazon Reviews (Python, NLTK, TextBlob, Tableau, HTML, CSS, JS) ([demo](#))

May 2020 – Jun 2020

- Generated an interactive dashboard of visualizations including – bar graphs, pie charts, treemaps, etc., of Amazon reviews using Tableau across 7 product categories.
- Performed sentiment analysis using NLTK and TextBlob to allow product owners to view the polarity and sentiment of customers.

Meal Detection using CGM data (Python, NumPy, Pandas, SciPy, scikit-learn, pickle)

Jan 2020 – May 2020

- Trained a Support Vector Classifier on Continuous Glucose Monitoring (CGM) data to automatically detect meal intake in diabetic patients achieving an accuracy of 92.36%.
- Preprocessed the data and extracted meaningful temporal and frequency-based features from the glucose time-series data.
- Applied K-Means and DBSCAN algorithms to cluster meal data based on the number of carbohydrates for further analysis.

Large Scale Geospatial Analysis of NYC Taxi Trips (Scala, Apache Spark, SparkSQL, sbt, Ubuntu)

Jan 2020 – May 2020

- Identified statistically significant clusters for taxi pickups in a Spatio-temporal domain using Apache Spark and Spark SQL.
- Retrieved the 50 most significant hot spot cells using the Getis-Ord (G_i^*) statistic.

EDUCATION

Arizona State University, Tempe, Arizona

Aug 2019 – May 2021

Master of Science in Computer Science, **GPA: 3.75/4**

Coursework: Artificial Intelligence, Data Processing at Scale, Statistical Machine Learning, Data Mining, Data Visualization, Web Mining

Manipal University Jaipur, Rajasthan, India

Aug 2015 – May 2019

Bachelor of Technology in Computer Science, **GPA: 8.14/10**

Coursework: Design and Analysis of Algorithms, Relational Databases, Python Programming, Big Data Analysis