APPLICATION FOR MAJOR LEAGUE HACKING FELLOWSHIP FOR SALIM OLANREWAJU OYINLOLA

Friday, 4th of August, 2023

Code Sample GitHub URL

https://github.com/salimcodes/Contact-Tracing-App

Which programming language/technology are your contributions to this code sample primarily written in?

Python

Briefly describe what this code sample does: (250 Words)

The code in itself defines a Python script that uses the DBSCAN clustering algorithm to perform contact tracing. It imports necessary libraries, including Pandas for data manipulation, scikit-learn's DBSCAN for clustering and Gradio for creating a user interface. The Predict function reads location data from the JSON file, applies DBSCAN clustering using haversine distance metric, identifies clusters associated with a given input name, and finds potential COVID-19 infected individuals based on their clusters. The Gradio interface takes an input name and returns a list of names that might have been in contact with the input individual. When run, the web app presents users with the option to input a name and receive a list of potentially exposed names from a prototype dataset of ten people.

The code programs a simple Machine Learning app built using python. The app can be used for COVID-19 contact tracing as it helps one find out if they have been in contact with someone who has tested positive for COVID-19. As a prototype, it was trained on a dataset of 10 people and their locations in terms of longitude and latitude. The app takes in their names and outputs the names of people they have been within six feet of.

Briefly describe what you learned when you created this code sample: (250 Words)

When I created this code sample, I learnt the concept of unsupervised machine learning which this code sample uses through the application of the DBSCAN clustering algorithm. Unlike the more common supervised machine learning concept, with unsupervised machine learning, the algorithm works on unlabeled data, finding patterns or structures within the data without any predefined target output. In my previous machine learning algorithm exploits, I had worked with labeled data. As such, in this case, I found it interesting and intriguing to work on a model that does not require any labeled data for training. Ergo, I learnt and gained insights on the concept of supervised machine learning. In this case, the unsupervised machine learning model uses latitude and longitude coordinates of individuals' locations as features to group them into clusters based on their geographical proximity.

Furthermore, I learnt how to make my machine learning models available to users. My understanding based on observation is that most Machine Learning models usually start and end in Jupyter notebooks. Whilst writing this code sample, I learnt how to use Gradio to quickly prototype and showcase my model, even without in-depth knowledge of web development.

Essays are an important part of how we evaluate applicants for the MLH Fellowship. Make sure you include enough information to help us understand who you are, why you want to be an MLH Fellow, and what you would bring to the program.

Your essays are your first impression to our admissions team. The best essays show us how passionate you are about this opportunity and give us lots of detail about you and your interests. Take your time here and show the best possible version of yourself! There is no word count minimum, but we recommend at least a paragraph or two for each essay.

Why do you want to become an MLH Fellow?

There are four major reasons why I would love to become an MLH Fellow. All of which alludes to the fact that the fellowship perfectly aligns with my personal values and interests.

Firstly, I have always been interested in contributing to open-source projects. This was the major reason why I chose to become a GitHub Campus Expert a year ago. In this role, I have gotten to let my passion for technology and open source drive me to advocate for open-source contributions and foster a culture of collaboration and innovation in my community. You see, I find the idea of contributing to projects that people depend on extremely exciting. As opposed to what side projects afford me, I like that these open-source projects come with the exposure to the challenges and intricacies of working on software that is actively used by a community of users. Moreover, while that is ongoing, I get to gain hands-on coding experience that allows me to work on actual codebases, debug issues and implement new features. Given that the MLH Fellowship would give me the

opportunity to work on projects sourced directly from corporate partners, I would like to become a MLH Fellow.

Secondly, I am a strong believer that there is no better investment than investment in oneself. I believe that everyone regardless of their background, race or sexuality owes it to themselves and to give themselves enough of the resources required to become the person they want to be. The person I want to be a world-class software engineer and the MLH fellowship not only takes me closer to that dream but it would also give me the resource to become that person.

Furthermore, as a Microsoft Learn Student Ambassador who just achieved the highest milestone in the community after less than eighteen months of being in the program, I can testify to the impact of growing with a network of talented individuals. In my time as a student ambassador, I have grown to lead my life with the “don’t go alone” mantra in mind. This holistic approach to education has come with a day-to-day support network where I can discuss ideas, troubleshoot issues, and get guidance whilst being part of a tightly-knit group of like-minded individuals dedicated to helping each other succeed in the tech field. Similar to this, the Major League Hacking Fellowship would give me an opportunity to join a small group of aspiring software engineers whilst providing me with a supportive network of peers and mentors to foster my growth.

Finally, I am extremely passionate about building by collaboration with others. Over time, I have noticed that collaborating with others tends to expose one to a variety of perspectives, experiences and approaches which in turn has fostered my thinking and inner creativity. As such, I would like to become an MLH Fellow because I understand that the program puts a premium on learning by collaboration.

The MLH Fellowship is a diverse community that welcomes Fellows from a wide range of experiences and backgrounds. What perspective or experience will you bring to the fellowship to strengthen our community?

Being from a country with over 250 ethnic groups, each with its own tradition, language and custom, my background is a unique one. I say this because by virtue of this diversity, I bring an open mindset to understand those around me and a fresh viewpoint that would enrich discussions and problem-solving within a global team. As a young Nigerian, growing up in the country's commercial epicenter has taught me humility and empathy as I now understand that it takes a humble mind to listen to the diverse opinions of others, and that one must have an empathetic heart to understand a heterogeneous group effectively.

Furthermore, an experience I bring to the fellowship to strengthen the community is as regards social impact. I believe that the strongest among us can't thrive until the weakest is taken care of. This perspective which I pride myself on underscores the importance I place on addressing the needs of the most vulnerable and marginalized members of society. In the technology context, this viewpoint is reflected in my outlook on how technological products should be designed with accessibility in mind. I believe that not only should open-source projects that would serve users be usable by people of all abilities including those with disabilities but it should also be one to ensure a better quality of life for future generations. This is the perspective I bring to the fellowship to strengthen the community.

Anything else we should know about you

I am really passionate about making an impact whether it is by contributing to a project that serves people or by trying to make a big impact from small places. In

my opinion, the biggest allusion to this for me is that two years ago when I was amongst the 6% of applicants selected to be a United Nations Millennium Fellow for the class of 2021, I did not just want to make an impact during the semester-long program. I wanted something more because good just wouldn't cut it for me if great was an option. In that time, I founded a mental health advocacy group named SoundAsABell Initiative. The initiative which only started as a semester-long project to address the third sustainable development goal has now grown to something with over twenty volunteers. And although I want to make even more quality impact with the group in the future, seeing that in our little ways, we have been able to educate young Nigerians about mental illnesses in a bid to alleviate the stigma and stereotypes associated with persons suffering from mental illnesses. Seeing that impact gladdens my heart.