Hipopathy: Creativity, Artificial Intelligence and Machine Learning for Metaphor Understanding in Hip-Hop Lyrics in the International Computer Science Institute (ICSI)

Open. Apprentices needed for the Fall semester. Please do NOT contact faculty before Monday, September 10th (the start of the 4th week of classes)! Enter your application on the web beginning Thursday, August 16th. Activate it by submitting a paper copy and an attached transcript and class schedule at the URAP office by Wednesday, August 29th at 4pm.

The International Computer Science Institute (ICSI) has some research openings in the area of Natural Language Understanding. This area includes research in some of the following topics:

(1) Learning reasoning trajectories using metaphors: we apply machine learning algorithms to examples of hip-hop lyrics, in order to determine how people reasoning about concepts in a hip-hop centric way.

(3) Reasoning visualization: One of the goals of our project is to assess how close people can get to adopting someone else's way of reasoning about the world. So we explore visualization techniques to help us compare two separate reasoning trajectories.

There are several possible roles for a URAP, depending on qualifications: (A) Data Generator, (B) Platform Architect, or (C) Algorithm Developer.

(A) Data Generator
- For the prototype that we are building, we are using the lyrics of Jay-Z as a starting point. In his book *Decoded*, he analyses a fair amount of the lyrics he has written. Your job will be to investigate the lyrics and suggest ways we can chunk them and tag them with the appropriate analysis given by Jay-Z.
-You will learn to craft new methods for visualizing complex linguistic data using common web-based visualization libraries such as D3.js.

(B) Platform Architect
- Design the user interactions and workflows necessary for people to use our product.
- Implement those concepts using HTML, CSS, Javascript, and Django to create an interactive database driven website for the analysis of concepts in hip-hop lyrics.

(C) Algorithm Developer

- Utilize or develop state-of-the-art Statistical Machine Learning algorithms for processing hip-hop data.
- Develop experiments that demonstrate the effectiveness of those algorithms on

clustering and classification problems.

Day-to-day supervisor for this project: Omoju Miller

Qualifications: All URAPs will be expected to be highly motivated, organized, and self-directed. Those that have a general interest in how people reason will get the most out of the apprenticeship. Additional requirements for each type of position are listed below:

(A) Data Generator - any major or class level is fine, though those with greater computational abilities are preferred. Familiarity with data visualization packages or javascript is desirable but not essential.

(B) Platform Architect - Prior experience in some form of web design is required. Preference will be given to those who have working familiarity with the following: HTML, CSS, Javascript, Django, and Python.

(C) Algorithm Developer - Students who have familiarity with Statistics, or Computer Science are preferred, particularly if the courses relate to Artificial Intelligence or Machine Learning. Strong programming abilities are required, as well as the ability to pick up new areas of knowledge quickly.

Weekly Hours: 6-9 hrs