ENVISION 2020

Entry: Sadhika Akula

Judge: Lee (mdlee@uci.edu)

1. Significance - The contestant's proposal either aims to solve a small inconvenience that affects a large population or a problem with a large impact that affects a small population. There is a literature review which supports the significance of the problem.
2. Feasibility - The contestant's interpretation of all pre-existing technology, methods, and concepts she describes in the proposal are correct. If the contestant can take all the steps, the study will succeed.
3. Innovation - How novel and creative is the proposal idea? Is it different from pre-existing concepts?
4. Approach - The funding, time, and resources the proposal asks for are justified by the breadth of the potential impact. In other words, the proposal uses the most avant-garde, efficient, and effective methods available to accomplish the goal. (Because this is a high school level competition, students are *not required* to include a budget in their proposal.)

*Grade on a scale from 1-9 where 9 is the highest score possible. Please **score in each category to the tenth** e.g. 7.1 or 3.8. Add up these values to get your overall score.*

Significance	Feasibility	Innovation	Approach
7	5	5	3

OVERALL

5

Judge's comments: I agree that the issue of bias in machine learning and other algorithmic approaches to making real-world decisions is important, and becoming more important with the increased use of these methods. I think it would have been useful to draw a distinction between sources of bias that result from the selection and curation of training data sets (the proposal

discusses this source well), and sources of bias that arise from the nature of the algorithm itself. The proposal says less about this possibility, but it seems worth exploring. The proposal makes a number of strong claims that need evidentiary support, preferably through citations to the relevant scientific literature. I am not convinced, for example, that the construction of data sets decades ago is a significant cause of bias in many domains ("humans and oftentimes it has been created between ten to twenty years ago"), because I think the ubiquitous digitization of information is relatively recent, and most the large data sets I work with have been constructed quite recently, but I could be wrong. The proposal needed to list these domains, and provide evidence. A final issue that would have been worth exploring is how users and society will come to trust algorithms, especially if they continue to be "black boxes" (as for most deep neural nets, for example). How can trust be improved and measured. Even if algorithms are de-biased, they will not be used unless people recognize their lack of bias.