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Educational Neuroscience Videos for an Interested Lay Audience

Project Description:

I would like to gather materials and produce four roughly five-minute videos exploring neuroscience concepts for an interested lay audience. I already have concrete plans for two of the videos, which would be concerned with explaining the mechanism of fmri scanning and the idea of statistical power and multiple comparisons in science. The subject of the other two videos will be decided based on discussions with faculty and students in the community regarding which topics would be most valuable to educate the public about.

Rationale:

I've framed this as a project directed at the lay public, but even within the academic research community there is a need for simple, clear explanations of science concepts outside of our direct areas of expertise. I was inspired to create a video explaining statistical power by a professional development event held by the neuroscience program on the topic, where it became clear that the issue is much less intuitive than it might seem. I believe such a video would not only be of interest to the general public, but also a valuable teaching tool and discussion catalyst for the Stanford community. The fmri video and others will also be aimed at helping to clarify scientific methods and ideas in such a way as to benefit both lay and academic audiences. I currently do not have the materials necessary to produce videos after moving to Stanford, so the resources from this grant would also allow me to continue pursuing my interest in educational outreach by producing future videos in my free time beyond the scope of this proposal.

Pilot Data:

I have produced about a dozen videos on science and math topics so far in my free time, which are hosted on my YouTube channel. My channel has over 3 million views and 8k subscribers. Last summer I was a winner of the Khan Academy Talent Search. I was also awarded second place in the Society for Neuroscience's Brain Awareness Video Contest for my most recent video on population coding and visual illusions:

<https://www.youtube.com/watch?v=gTWIhU0EOxY>

Diversity:

Hosting content on YouTube allows anyone with interest, from any walk of life or geographic location with internet access, to access and enjoy my work. I hope that my videos might inspire some of the next generation of scientists to pursue their passions.

Methods of Design:

I will write scripts for each video and consult with relevant faculty to ensure accuracy before producing my videos.

Timeline and implementation plan:

In my experience, it takes 1-2 hours per minute to produce a video depending on my level of

prior knowledge. I plan to produce one 5-10 minute video per month for four months, to ensure that I will have ample time to produce high-quality content. As a rough guideline, I would expect to spend one week each on research and script writing, and then two weeks on audio/video recording and editing.

Anticipated work product:

Four 5-10 minute videos with whiteboard animations, one on the mechanism of fmri, one on statistical power and multiple comparisons, and two on other as-yet undetermined neuroscience-related topics.

Plan for Evaluation:

YouTube views and comments would be a good first pass in terms of reception, and the videos themselves could easily be viewed and judged by anyone wanting to personally quantify the work resulting from this investment.

Plan for dissemination of results:

Publication on my YouTube channel (non-monetized if that is a necessary corollary of this grant)

Anticipated Impact:

I've received very positive and encouraging feedback on my previous videos, with many viewers across a wide range of ages and occupations thanking me for sharing my passion for science. I would hope that these videos would allow a lay audience to gain a real understanding of neuroscience methods and topics and promote public support of neuroscience research. The videos could also be used as teaching tools and conversation starters among the Stanford community. For example, I found the discussions we had within the neuroscience professional development session on statistical power to be very helpful and would like to share this sort of experience with the larger research community.

Specific educational aims:

To present, in a clear and accessible manner, the nature and logic of select neuroscience-related topics. Viewers should come away with a functional understanding built from first principles which allows them to understand the topics and ask the right questions to further their own educations. A background in science should not be necessary to follow the videos, but those in related fields should also feel that any generalizations or shortcuts taken are justified and preserve the core concepts being related.