

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Excellent

Explanation to Applicant

The amount of and reach of this applicant's work is nothing short of amazing. It's fortunate for the pool that this is the last applicant I am reviewing, as the standard he represents would have colored my analysis of the other applicants. The applicant has very strong letters of support from a variety of institutions and from a range of advisors. The applicant has a well articulated plan for conducting his research. The most impressive thing about the applicants breadth of work is how you can see how each effort, while on the surface seemingly loosely related, provides some necessary foundation for the next. For example, his work with R on retinal topography, provides the foundation in data science for his proposed work for testing longstanding theories on neuromuscular coordination.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

The applicant has an impressive record in a diverse range of academic fields; from neuroscience, to big data, to entrepreneurship. The domains in which he has applied his work is equally impressive; vision, healthcare, automotive sales and marketing, and biomechanics. The applicant is proposing to apply Big Data techniques to develop a model of locomotion in humans. The results of his work would apply to anything from rehabilitation and therapy, to sports performance.

Summary Comments

The applicant received an honorable mention in 2015 for this award. That must have been an amazing pool of candidates. The proposed work has very strong intellectual merits, and strong broader impacts. The letters of support are impressive in their enthusiasm and their diversity. While there are some great candidates in this applicant pool, this one stands out.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Very Good

Explanation to Applicant

The candidate demonstrates intellectual merit through a strong academic record and breadth of scientific and technical challenges in the projects he has completed. The support letters are very strong. More clarity on the research project description would have been helpful, as it seemed to digress into marketese at some times, with strange combinations of phrases like "neuromechanical Big Data biologist" and "torrent of behavioral data" (not sure what is behavioral in the data he is working with?).

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

The candidate's multidisciplinary background and entrepreneurial spirit suggest he can make significant impact in many ways.

He has had good exposure to a variety of scientific meetings and researchers including ETH-Zurich. The research space is ambitious, and highly impactful, and a recent decline in the consumer market of things like personal wearable sensors is attributed in part to the "what do I do with all this data" problem. Researchers who have a plan to "connect the dots", not only with the skills to understand high dimensional data but understand ways too manage, package and deliver solutions based on it are solely needed. His potential to accomplish this sets him apart. The only slight ding here is the implication of incrementalism through extension of already constructed algorithms.

Summary Comments

A candidate with the potential for high impact in anything he works on, with a broad set of skills. He may require focus at some point, but there doesn't seem to be a compelling reason to limit the breadth of his work as long as he can continue to connect all of the areas. The support letter from the primary advisor stood out (which is hard to do).

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Excellent

Explanation to Applicant

The applicant has an outstanding academic record as well as relevant experience in research related to the research proposal. The applicant completed his BA in Life Sciences and has made impactful research contributions such as Vectormap and Hit-and-Run algorithms. He even had valuable experience in start-ups. The research that he proposes aims to bridging the gap between theoretical framework of locomotion and behavioral data collected in scale. The applicant is uniquely qualified for the proposed research and has sufficient access to facilities via collaboration. One important issue that the research plan should have addressed is the tradeoff between proprietary and open platforms. Letters of recommendation all attest to the applicant's excellent aptitude for research in the intersection of CS, neuroscience, biology, and health sciences.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

The applicant is very committed to broader impacts, and in his terms, translational science and entrepreneurship. His research on exploiting high-dimensional behavioral data has great potential to impacting athletes, Parkinson's, and stroke patients. His experiences with start-ups will facilitate technology transfer.

Summary Comments

The applicant proposes to make theoretical and empirical contributions to neurorehabilitation research. He is committed to transforming the high-dimensional medical data to high value for patients and clients. Intellectual merit and broader impact aspects of the application are both very strong. Equally strong references give confidence that this applicant has a bright future in his chosen fields of work.