Dear editor,

We are writing to submit our paper entitled “Conflict and Strategy in Collective Computation.” In this work, we extend a stochastic model of decision-making that has been successfully used to explain neural decisions by applying it to decisions made between animals in a social group, by applying it to a group of individuals each pair of which is making a decision about each other, and by considering the a conflict of interest between the individuals making the decision. We find that a conflict of interest between individuals can incentivize individuals at the bottom of the group to make more accurate decisions. We also find that the waiting costs of the decision process strongly influence both the skewness of the in-degree distribution of the resulting decision network and the algorithm that should be applied to the network to accurately recover the individuals’ true states.

We designed our model to study collective computation in primate social groups. However, the mathematical framework we used has been extensively applied to neural decision making and, because of its generality, it can be applied to many other systems in which a collective output depends on pairwise decisions between individuals. We therefore expect that our work will be of interest not only to scientists interested in primate social systems and neural decision making but also to any scientists interested in collective computation. The algorithms we used were designed to measure consensus in an interaction network and have been used in a number of fields, including ecology, animal behavior, and computer science, so our study of the development of the decision network should be of interest to network scientists, as well as researchers in those fields.

Possible reviewers for this work include

Thank you for your consideration,

Eleanor Brush