Project SCATE - Evaluation 150761

QUALITY AND SCIENTIFIC AIM

a - Clarity of research objectives and hypotheses
b - Scientific ambition of the project and position in relation to the state-of-the-art
[Added value of the project in terms of scientific contribution - scope, problem and methodological approach - and in terms of knowledge production]
c - Adequacy and relevance of the methods implemented
[« Relevance » is also understood in terms of ethics, scientific integrity and social responsibility of the sciences - and as such, taking into account the sex and/or gender aspect -, of disciplinary coverage (mono-trans-inter-disciplinarity) and of scientific risk management. “Methods” also includes Open Science practices, namely: data management, reuse of existing data sets, development or contribution to open source software, standards, and adopting permanent identifiers for all research products]

COMMENT

The aim of the proposal is to develop algorithms for several (not the most advanced) tensor decompositions. In my opinion, the subject of the proposal was chosen adequately. I agree with the decision to focus on Tucker and CP tensor decompositions, and I would argue that before developing algorithms for more complex decompositions like Tensor Train, it is important to develop and study algorithms for more fundamental decompositions.

As far as I can tell the authors are aware of the state of the art and propose a reasonable plan to exceed it in the course of the project implementation.

The proposal is rather straightforward and does not have any difficult methodological issues. The algorithms should be implemented, tested, and analyzed, and the PI has the necessary expertise for this task. Additionally, the host institution is internationally renowned for developing such algorithms, and I am sure that the PI can count on the expertise of other researchers at the institution.

ORGANISATION AND IMPLEMENTATION OF THE PROJECT

a - Skills, expertise and involvement of the scientific coordinator
b - Contribution to the coordinator’s level of responsibility and team development
c - Adequacy of implemented and requested means to the project’s objectives

Warning:The French National Research Agency (ANR) has signed the San Francisco Declaration on Research Assessment (DORA). Consequently, all the results of research work must be considered (scientific publications, data sets, software, etc.). The use of bibliometric indicators such as the impact factor and the h-index must be banned in favor of qualitative indicators on the works, such as their influence on policies and practices.

COMMENT

The PI's background is well-suited for the project, as evidenced by his experience in tensor computations and algorithmic aspects of large heterogeneous systems. Additionally, his prior work on practical scientific computing projects suggests that he also understand well the context - in which practical applications such algorithms could be used.

The proposed team and the PI's involvement in the project are also appropriate.

The requested funding is reasonable; the project implementation plan is a bit too detailed to my taste (but I understand that this is the ANR requirement to the incoming proposals).

IMPACT AND BENEFITS OF THE PROJECT

a - Scientific impact and potential economic, social or cultural impact
b - Strategy for the dissemination and exploitation of the results; promotion of scientific, technical and industrial culture

COMMENT

As with most mathematical projects, their impact is almost always indirect but potentially significant. The proposed project aims to study and possibly surpass state-of-the-art methods in tensor computations, which would have a substantial impact on the field of scientific computing. This, in turn, could directly impact the economy by enabling the design of better high-technology products.

The strategy of disseminating the results is good, but I would expect that for such a project could already at the state of proposal one could find parties interested in directly using the algorithms.

GENERAL OPINION including the strengths and weaknesses of the project

COMMENT

Overall, I assess the project as excellent and strongly recommend funding it.