Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Excellent

Explanation to Applicant

The applicant, Tyler Chen has an outstanding academic record together with a relevant research experience related to the proposed project. Tyler is in his second year of graduate study in applied and computational mathematics at the University of Washington. The proposed project will focus on the development and analysis of novel efficient and accurate parallel and randomized Krylov subspace based numerical linear solvers. All three recommendation letters are excellent and elaborate on Tyler's outstanding mathematical/scientific abilities, creativity, hard work, passion for research and leadership skills.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

Tyler is actively involved in teaching/tutoring courses in STEM disciplines to students with diverse backgrounds, as well as Tyler is active in various outreach activities. Moreover, the proposed research project will have an important impact on improving efficiency and accuracy of computer codes, ranging from electrodynamics simulations to atmospheric simulations. Summary: The applicant aims to develop and analyze novel efficient and accurate parallel and randomized Krylov subspace based numerical linear solvers.

Summary Comments

The application is very well-written, and the intellectual merit and broader impact aspects of the proposal are both very strong. Outstanding recommendation letters give confidence that Tyler Chen has a bright future ahead of him, and will be a leader in his field of research and education.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Excellent

Explanation to Applicant

Applicant is an strong student of math and physics while at Tuft (2nd letter). He participated in a highly selective NSF-RIPs research program, with good research outcomes. He was top student at Univ Wash same cohort, in terms of performance at qualifying exam. The proposal was very clearly written, in terms of motivation, problem, approach and possible impact of designing and improving Krylov's method in the context of finite precision arithmetic. It was the best proposal in my group of proposals.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

Dedicated teaching assistant for lab section, and documented performance of students and ways to improve the course design

(2nd letter). Despite having mental issues, the applicant has exceled academically withstanding the psychological pressure. He leads in outreach programs and activities to better equip fellow graduate students in management of mental health. Proponent of open source, and translates Matlab codes to Python, to ensure free public to the codes.

Summary Comments

Despite having mental issues, the applicant has excelled academically (good performance in a highly selective NSF-RIPs research program). Well-written proposal on an important problem in numerical PDE. Engages in outreach programs and activities to better equip fellow graduate students in management of mental health.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Very Good

Explanation to Applicant

Tyler is planning his phd research in scientific computation involving variants of conjugate gradient algorithm using parallelism with focus on solving systems of linear equations such as computing eigenvalues of symmetric matrices. This research is more on the theoretic side. Tyler has a solid undergraduate training as his transcripts indicates and as he has demonstrated in his graduate level work. It looks that Tyler has a good understanding of the proposed project and already working with an adviser. He is on the right track. There is no question that he will succeed in his graduate studies.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Good

Explanation to Applicant

Tyler is proposing of establishing international collaboration, has organized event helping graduate students managing mental health during graduate school, and is currently maintaining a public repositories containing course notes, working problems, and codes of homework assignments. These seems to be good start for a graduate student.

Summary Comments

Tyler is well prepared and motivated for graduate school. He is on track toward his ph.d. research inline with most graduate students at this time. He has started to build his broader impact activities.