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To Whom It May Concern

This letter is to express my strong support to and interest in the graduate program in Applied Mathematics offered by Glushkov Institute of Cybernetics of the National Academy of Sciences of Ukraine.

Glushkov Institute of Cybernetics is known as the birthplace of one of the first computers in continental Europe, and it is not surprising that some of the most remarkable contributions to the field of optimization have been made by researchers of the Institute. In particular, the Ukrainian researchers have had a considerable impact on the historical developments in linear programming. Linear programming (LP) is one of the most popular and well studied topics in optimization and applied mathematics. Despite the fine performance of the classical simplex method on a wide variety of practical instances, it has an exponential worst-case time complexity and therefore is unacceptably slow in some large-scale cases. The existence of a theoretically efficient algorithm for LP remained an open question until 1979, when Leonid Khachian published his polynomial-time ellipsoid algorithm for linear programming. This result was largely based on the previous work by N. Z. Shor and his collaborators from Glushkov Institute of Cybernetics. This major theoretical breakthrough served as motivation for development of some of the most practically effective algorithms for LP, such as interior point methods.

Despite the inadequate levels of governmental support in the past three decades, the researchers from the Institute continue to make significant research contribution and are actively involved in international research community. I had an honor of participating in several collaborations with the Institute. In particular, I was awarded one NAS and two NSF grants for organizing International Research Experience for Students (IRES) program hosted by Glushkov Institute of Cybernetics in Kyiv. Through this program, each summer between 2005 and 2011, I visited the Institute with groups of American students, who worked on research projects in the field of optimization under the guidance of researchers from the Institute. In addition, I collaborated with the researchers from the Institute on a grant funded by CRDF and on organizing a NATO workshop in Kyiv in 2013. Unfortunately, our collaboration since then slowed down due to the ongoing Russian aggression against Ukraine, however, we recently

applied for a new joint CRDF grant. Our plan is to renew and intensify the collaboration in research and education. As a collaborator, I will be happy to assist my collaborators with mentoring the students and focusing on top-quality research contributions of high novelty and significance. I believe that with appropriate level of support from the government this program has a potential to become a huge success story.

I would like to conclude my letter by pointing out that the IRES program I organized attracted many Ukrainian students from Taras Shevchenko National University of Kyiv as well as The National Technical University of Ukraine. Several of these students continued their education in the U.S., in part, due to the lack of an adequate option in Ukraine at that time. I am sure the future students will benefit from the opportunity to complete a top-level research degree in applied mathematics without leaving the country. Clearly, attracting top students requires significant financial investment, however, having illustrious history and high caliber researchers with international reputation gives the Institute a competitive advantage compared to many other institutions around the world. With no or little support from the government, this advantage will soon be lost and will require exponentially more resources to restore. Adequately supporting an active graduate degree is the very least that must be done to further enhance the reputation of the Institute of Cybernetics and Ukrainian science. I believe that allocating sufficient resources to research-intensive graduate programs like this one it is of importance for Ukraine's future.

Please do not hesitate to contact me if I can be of any further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Butenko", with a long horizontal flourish extending to the right.

Sergiy Butenko