Northeastern University
College of Engineering

November 23, 2022

To: The Selection Committee,
Research Science Institute 2023

Dear Sir/Mam
It is my honor to write this reference on behalf of Ansh Tiwari as a candidate for the prestigious research science institute.

I had the pleasure of meeting Ansh Tiwari through the Young Technology Scholars Program as his instructor. This program has a rigorous selection process and once selected, takes a tremendous amount of dedication and hard work to be successful and receive the certificate of completion.

Ansh was a standout student in this highly competitive program. Although he did his project work with Prof Ravi Jasuja, of the Brigham and Women's Hospital, I was impressed with all my interactions with him in class and how he worked on the challenging problems that were set for the group. His genuine interest in learning about the subject is evident by the insightful questions he was asking during the program. I think learning should include collaborative discussions and debates among learners and mentors. It was Ansh's well-researched, thoughtful, and engaging arguments that stood out to me most among the various interactions I had with other participants.

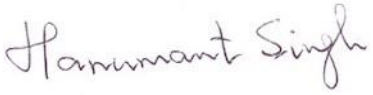
As far as learning new things is concerned, Ansh showed himself to be willing to go above and beyond. Ansh was in his 9th grade when he participated in YTS, which was implausible because he already knew quite a lot about electronics exercises and topics covered during the program.

As the program came to an end, ansh learned that he was very interested in leveraging the power of emerging technology to solve some of the most pressing problems of the world, particularly in the field of self-diagnosis and healthcare. In his later years, he worked under Dr. Ravi Jasuja's mentorship, where he researched the inefficiencies of modern healthcare services. From his work with Dr. Jasuja, he developed a machine learning-based technique for finding new liquid biopsy-based biomarkers for ovarian cancer. Ansh recently developed a novel deep learning solution for early detection of diabetic retinopathy (DR). His research included testing various data optimization techniques to increase the validation accuracy of the CNN model, and in the end, he found out, CLAHE-based data optimization along with the otsu thresholding algorithm is much more efficient for finding out vein density in FUNDUS images (Images of Retina) of the patient, which are the primary representation of DR. The results of his research won him the CSIR Innovations Award for High School Research, which is the highest award for high school students. The path Ansh took was not an easy one; he was not privileged with access to all the resources he needed to succeed. Ansh's parents have never been to college, nor do they have the financial means to support his journey to become a scientist.

From my experience in working with him, I think ansh will make a great addition to the program, bringing with him his experience working with diverse groups of people and his ability to support others during difficult times. Based on my experiences from the MIT WHOI Joint

Program, I am confident he will be a great fit for the Research Science Institute as well as the MIT culture in general, and benefit greatly from the outstanding research faculty, lectures, and opportunities that RSI provides. If I look at the rest of his credentials, it is obvious that he is an extremely talented and very hard-working student who has excelled in a variety of areas including in terms of his leadership in pursuing ambitious projects, and just as importantly, having a strong focus on problems that serve the community and are highly social relevance. I have the highest regard for him and would like to recommend him very strongly, and without any reservation, for The Research Science Institute.

Sincerely,



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