Personal statement

I am a physician-scientist in training with a broad experiential foundation in ophthalmic imaging, artificial intelligence (AI), and translational retinal research. My career has been shaped by formative experiences in clinical ophthalmology, telemedicine innovation, and cutting-edge retinal imaging research across multiple academic institutions. My long-term career goal is to become an academic vitreoretinal surgeon and clinician-scientist who leverages advanced imaging and computational tools to improve the diagnosis, monitoring, and treatment of blinding retinal diseases.

My research journey began as a medical student at Government Medical College and Hospital, Chandigarh, India, where I developed practical smartphone-based telemedicine applications for postoperative glaucoma patients under the mentorship of Dr. Parul Ichhpujani. This early work sparked my passion for using technology to expand access to quality eye care and led to several peer-reviewed publications in telemedicine. Motivated to further pursue my interests in ophthalmic imaging and retinal disease, I joined the Cleveland Clinic Cole Eye Institute as a Post Doctoral Research Fellow in Ophthalmic Imaging under the mentorship of Drs. Justis P. Ehlers and Sunil K. Srivastava. In this time, I led numerous projects developing machine learning pipelines for automated detection and quantification of geographic atrophy, hydroxychloroquine retinal toxicity, and ellipsoid zone at-risk regions using spectral-domain OCT. I also conducted the quantitative imaging analysis for the PRIME trial evaluating ultrawidefield angiographic biomarkers in diabetic retinopathy treated with aflibercept in a prospective trial, and I co-authored a comprehensive review on OCT angiography quantitative biomarkers that has become a widely cited reference in the field.[1-4]

I am currently a PGY-3 ophthalmology resident at the UPMC Vision Institute, University of Pittsburgh, where I continue to pursue research in AI-based retinal imaging, ocular inflammation, and health equity in eye care with over 40 peer-reviewed publications in this space. I serve as the Guest Editor for a BMC Ophthalmology (Springer Nature) collection on "Telemedicine in Ophthalmology" and have completed 28 peer reviews for 17 journals. I am also actively involved in community service as the Diversity and Inclusion Chair for the Foundation Fighting Blindness (Cleveland Chapter) and as a volunteer physician for the Eyes on Wheels, providing free eye screenings in underserved rural western Pennsylvania.

The Heed residents retreat would provide critical resources to advance my career aspirations at the intersection of ophthalmic imaging, AI, and clinical retinal care. I am committed to a career in academic ophthalmology dedicated to alleviating visual impairment through innovation, mentorship, and equitable care.

1. **Kalra G**, Zarranz-Ventura J, Chahal R, Bernal-Morales C, Lupidi M, Chhablani J. Optical coherence tomography (OCT) angiolytics: A review of OCT angiography quantitative biomarkers. Survey of Ophthalmology. 2022;67(3):740-758.
2. **Kalra G**, Talcott KE, Kaiser S, Ugwuegbu O, Hu M, Srivastava SK, Ehlers JP. Machine Learning–Based Automated Detection of Hydroxychloroquine Toxicity and Prediction of Future Toxicity Using Higher-Order OCT Biomarkers. Ophthalmology Retina. 2022;6(12):1170-1180.
3. **Kalra G**, Wykoff C, Martin A, Srivastava SK, Reese J, Ehlers JP. Longitudinal Quantitative Ultrawidefield Angiographic Features in Diabetic Retinopathy Treated with Aflibercept from the PRIME Trial. Ophthalmology Retina. 2024;8(2):130-139.

4. **Kalra G**, Williams AM, Commiskey PW, Bowers EMR, Schempf T, Sahel JA, Waxman EL, Fu R. Incorporating video visits into ophthalmology practice: a retrospective analysis and patient survey. Ophthalmology and Therapy. 2020;9(3):549-562.