THE UNIVERSITY OF UTAH

Department of Electrical and Computer Engineering

50 South Central Campus Drive Room 3280 Salt Lake City, UT 84112-9206 (801) 581-6941 FAX (801) 581-5281

April 1st , 2021

To
XXX
XXX.

Dear Members of the Search Committee:

I am writing to apply for a **tenure-track Assistant Professor position in the Department of XXX - XXX**, which I found advertised on your University's webpage. I recently graduated with a Ph.D. from the Department of Electrical and Computer Engineering at the University of Utah, where I studied under the direction of Prof. Berardi Sensale-Rodriguez. I am extremely interested in obtaining an academic position at your school, and in contributing to the strong research and academic level for which it is known worldwide. I believe that my academic training and my research and teaching experience had prepared me for being a productive researcher and educator.

Although my Ph.D. dissertation entitled "Solving Optical Inverse Design Problems using Computational Methods" is primarily focused in two different sub-areas of optics, my interests and previous expertise cover the fields of algorithms, computational electromagnetics, plasmonics, embedded systems, and wireless communications. **It is primarily due to my background, interfacing both electrical and computer engineering, physics, mathematics, and biology that I have developed a keen interest in pursuing multidisciplinary research alongside both undergraduate and graduate students belonging to culturally diverse backgrounds.**

During my PhD, I worked on utilizing computational algorithms to solve optical inverse design problems so as to achieve "extreme" or almost "thought to be impossible" results in two different sub-areas of optics: (a) diffractive optics (free-space) and (b) nanophotonics (on-chip). With respect to diffractive optics, I showcased extreme lens functionalities like super achromaticity, extreme depth of focus (DOF), and ultra-large field of View (FOV). Extending the same design methodology, I also showed how machine learning can help in engineering amongst the smallest integrated photonic devices, which could fuel a future Moore's law for photonics. **These works are monumental in solving some of the major bottleneck problems of traditional diffractive optics and nanophotonics in terms of operational bandwidth, area footprint, etc.** In fact, my work on flat MDLs has recently led to its commercialization through one of my Ph.D. mentors Prof. Rajesh Menon's startup company Oblate Optics, Inc., (https://www.oblateoptics.com/) and collaborators NIL Technology (https://www.nilt.com/).

Through my research, I developed skills required to do computational modeling and design novel devices, handle system-level integration, perform multidisciplinary research, and offer new ideas for product development. **I have also been successful in securing a couple of small research grants ($10,000 & $15,000) from Amazon Cloud Credits for Research Program and National Science Foundation (NSF) for my proposals entitled "Free Space Optical Devices**

**Based on Computational Design of Diffractive Optic Elements" (Grant No.: 051241749381)** and **"Advancing compatibility of novel flat lenses with commercial lens design processes"** respectively.

I also have previous teaching experience, having taught three different college courses as a Teaching Assistant ranging from undergraduate to graduate level. In this regard, I have developed a teaching philosophy and pedagogical approach emphasizing active learning. **My current teaching interests span the range of subjects falling under optics, electromagnetics, communications, optimization, and systems modelling as mentioned in the attached teaching statement.** I would enjoy discussing this position with you in the weeks to come. I am enclosing my Curriculum Vitae, Statement of Research and Teaching interests for your consideration.

If you require any additional materials or information, I will be happy to supply it. Please contact me at sourangsu.banerji@utah.edu for any other questions.

Thank you very much for your consideration,

Sourangsu Banerji
Electrical and Computer Engineering Department
University of Utah, Salt Lake City, UT 84112, USA
Email: sourangsu.banerji@utah.edu
Webpage: https://sourangsu.github.io/