Teaching Statement

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Although I wanted to become a professor for a long time, I had made up my mind to stay in academia only about two years ago. My Ph.D. advisor, Prof. Berardi Sensale-Rodriguez, is the person who gave me the passion for teaching and research. It was tough to begin a new life abroad right after college. His patience and efforts at the beginning of my graduate study helped me find the right path in my career and life. More importantly, it helped me to build confidence in research. I realized how vital a good mentor is to a student. Nonetheless, the experiences of working with my Ph.D. advisor Prof. Berardi Sensale-Rodriguez and my co-mentor Prof. Rajesh Menon at the University of Utah helped me to have a complete understanding of managing a research group as well as teaching at the same time.

Moreover, at the University of Utah, I was honored to guide two great senior undergraduate students, with whom I genuinely share the experiences and interactions as one would between a mentor and a mentee. All these experiences offer me the enthusiasm to teach students and help them with their careers and life, just like how my advisors had helped me and shaped my thinking. I believe that my experience and passion for teaching and research will help me to become a suitable faculty member in your department.

Teaching Experience: I served as a Teaching Assistant for Introduction to Semiconductor Physics (undergraduate level), Fundamental EM and Transmission Lines (undergraduate level), and Microwave Engineering-I (combined graduate and undergraduate level). In addition to evaluating homework and exams, I designed and graded all lab assignments for Introduction to Semiconductor Physics and Fundamental EM and Transmission Lines, as well as designed and advised final projects for Microwave Engineering-I.

Mentoring Experience: As a doctoral candidate at the University of Utah, I had advised two undergraduate researchers under the University of Utah UROP program. Both of them are working on developing machine-learning techniques to create smaller, more efficient nanophotonic devices. Two conference papers and one journal paper came out in 2020 based on this work. In addition to this, they also worked on translating our research group's CPU based optical modeling software to a GPU focused version to speed up the photonic simulations. In the summer of 2019, I co-advised two undergraduate senior foreign exchange students from Germany under the RISE DaaD program. One of them worked on incorporating flat lenses with custom made image sensors to demonstrate ultra-thin cameras. The other students' research was on developing 3D micro and macro lithography techniques using diffractive phase masks.

Teaching Interests: I would like to develop and teach courses in both undergraduate and graduate curriculum that focus on fundamental and practical aspects of electromagnetics, computer engineering, optics, as well as traditional systems and circuits classes. Besides being interested in teaching lower-level undergraduate classes fundamental to any electrical and computer engineering program of studies, such as electronic circuits, electromagnetics, signals and systems, and digital design; I have specific interests in developing the following

advanced topics: 1) AI for Electromagnetics and Optics; 2) Computational Electromagnetics; 3) Fourier Optics, and 4) Optimization and Systems Modelling. I would also like to develop other courses that are currently not available in your department.

Teaching Philosophy: My Teaching Assistant experience, mentoring experience, and my student experience have formed my teaching philosophy. My main philosophy can be concluded shortly as follows:

1. **Develop enthusiasm, diversity, and responsibility:** I am fortunate that I had teachers who had great passion and patience for their pupils. I certainly know how important it is for a student to build their confidence and interest. As a faculty, it is my responsibility to help the students with individual development, depending on their career goals, background, and capabilities.

2. **Teach the students "what to learn" and "how to learn":** In my opinion, the ability to solve a problem is much more important than the solutions to the problem itself. Based on my experience, there could be two main directions on how to train the students: a) *solving the same problem using different solutions*, and b) f*inding out various applications to which the same technique can be applied*. This could be practiced both in the laboratory and project assignments.

3. **Being pragmatic and visionary:** "Acting with vision or acting pragmatically" is a frequently asked question during our careers, though it seems that these two options are totally opposite thinking styles. Steve Jobs is a typical visionary who became a game-changer because of his great vision, while pragmatic thoughts gave him a great understanding of what the users need. By combing this practical approach along with being visionary, we can be effectively be "moving towards the stars, without tripping." I am looking forward to learning and offering the best combination of these two styles to students.

4. **Solve the real-world problems:** As we all know, most students who graduate with an engineering degree go to industries. However, while they gain some fundamental knowledge, yet they do not acquire experience in solving industry-level problems. I would strive to develop industry and academic projects in my class, so the students can choose a more specific project depending on the one they want to pursue. I believe my long internship experience and academic training will help me to accomplish this idea. Finally, I know that I have much to learn from my advisors, colleges, and students since there appears to be no single perfect method for teaching. I am looking forward to continuing teaching and training researchers and learning from peers along the way.