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Teaching Statement

Teaching is a process to understand students, motivate students, and deliver knowledge to students. Following my past experiences in university teaching and employee mentoring in companies, I found that teaching is not just making lecture materials and teaching them in classes with term projects and/or examinations to force them to study. The word "education" also includes the meanings of development of one's rationality, honesty, and even personality. University, as a higher educational institute, is a place to build up talents, assist students to achieve their dreams, and develop future leaders of society. I believe every student is a unique individual, and each one of them deserves respect and understanding.

In order to achieve the above educational purposes, the following three items are always in my mind when I educate students:

Understand why they do not understand Recall that when I first learned advance mathematics in high school, it was full of pain to understand differential equations and integrations. It is not only because there are many new mathematical syntaxes and rules to memorize, but the connections between them and our daily life are weak. Until I entered university and graduate school, the advance mathematics I learned begin to connect with each other and I started to realize how valuable they are. The same story happens to many students I have taught and supervised. Students who entered university in Hong Kong, China or South Korea are already talented. They studied very hard and performed excellently in public examinations. But one common trend I found about them is that they tend to be very quiet in class and they absorb whatever a teacher told without much thinking. Thus, during my teaching and supervision, I usually not only teach what are covered in lecture materials, but I also try to connect the materials with daily life examples in researches and real-world applications. I also actively asking questions to students in classes and to make a good discussion atmosphere so that I can keep track of their understanding. I found this teaching style effective, and it is also working well in employee mentoring. Instead of giving instructions directly, I spent more time in listening and giving feedbacks. Through these conversations and supervisions, we have also built-up tight connections and they usually surprised me a lot in working.

Identify individual talent I believe a great professor is also a great talent agent in hunting the best student in classes and in the whole world. Most successful professors know what kind of talents they are looking for, and a talented student not only motivate the discussion atmosphere in class but also attract more talented students to participate and to join the research group for advance studying. For many years, I have supervised many students. Among them, Jaesik Park, Taehyun Oh, Shangzhe Wu, Ho Kei Cheng, Lei Ke, and Qi Fan are specially gifted. Jaesik (Google scholar citations > 6000, ACs of CVPR/ICCV/ECCV) and Taehyun (Google scholar citations > 2000, ACs of CVPR/ICCV/ECCV) are the most representative Ph.D. graduates I have supervised in South Korea. Both of them are now a faculty member at Postech (in CS and EE department respectively) in South Korea after their Postdocs in Intel and MIT respectively. Shangzhe, after publishing two ECCV'18 papers with me in his undergraduate, joined the VGG group at Oxford for his Ph.D. has won the best paper award in CVPR'20 as the first and the only student author in that paper.

Ho Kei, who has published three first author papers in CVPR and NeurIPS in his M.Phil study at HKUST, is now studying his Ph.D. at UIUC. Lei Ke, and Qi Fan, who are now final year Ph.D. students at HKUST, both have published more than 6 papers in CVPR/ICCV/ECCV/NeurIPS and are going to continue their Postdocs in ETHZ and MPII respectively. With all these successful examples, I believe I can continue the success at your university to build a strong research team, train up future research leaders and make impactful researches to contribute the society.

Respect and be open-minded Research is a process to explore new knowledge, everything we know and we teach are bounded by the state-of-the-art knowledge and common understanding in our research field. I recall when I was an undergraduate student, the professor in the machine learning class taught us neural network is a dead end because its performance is worse than the state-of-the-art support vector machine (SVM). It was 2003 when everyone believes SVM is the future. I had also learned that increasing dimensionality of feature vectors is bad because there is a curse of dimensionality which we should seek for an effective projection of high dimensional data to a low dimensional manifold before classification. Looking back, they are not entirely correct, but it does not affect the development of research field and it also does not affect my respect to the professor who taught me machine learning by that time. Everyone made mistakes. Even Albert Einstein made mistakes in his master work of general relativity. But it does not affect the importance of the general relativity and the reputation of Albert Einstein. The same story can also happen when we are teaching the most state-of-the-art knowledge in our research field. Indeed, I tend to be open-minded when students are asking interesting questions criticizing the correctness of what we are teaching in class. I believe this attitude is especially important when we want to train up students with critical thinking.

Finally, if I have chances to teach at your university, I would be happy to teach the following courses: Computer Vision, Artificial Intelligence, Machine Learning, Deep Learning, Computer Graphics, Computational Photography, Image/Video Processing, any introductory data structure and algorithm courses and introductory programming courses using Python, and C++.