Describe briefly the focus area of your PhD research and the achievements that you have made to date? Why did you select this area? How do you sustain your interest and motivation?

Cheong Lai Hong: My research is about medical functional imaging where images show more than the usual single physical feature. For example, X-ray or ultrasound images reflect the physical properties of density and sound wave reflectance, respectively, of the objects being imaged. In my area of research, the functional images reflect a few physiological features such as the blood flow, density and permeability of blood vessels, etc.

Since the invention of X-rays, imaging, images of our body’s internal state have helped medical doctors in many ways. The recent development in the imaging technologies such as X-ray computed tomography and magnetic resonance, position emission tomography, ultrasound imaging, etc., is opening up many new possibilities. My research focus is on the analysis of dynamic contrast enhanced images for useful information to assist in medical doctors’ decision making. Currently, we are able to produce functional images that provide additional information that was unavailable from the raw data. The potential benefits that can be brought about for future patients from the result of this research has constantly motivated and inspired me to work in this area.

Describe your postgraduate experience in terms of its challenge to your personal growth and development?

Cheong Lai Hong: As a postgraduate, I have learned to be humble in the vast universe of knowledge and proud in my research area. My supervisor told me about a saying, roughly stated as: “The day I realize that I know nothing will be the day that I am qualified as a Ph.D.” Like the saying by Confucius, knowing what we don’t know is itself an important segment of knowledge. I once overheard a conversation between my uncles about the beauty of a Chinese phrase about knowledge (please put in the words in Chinese: 学海无涯), which literally can be understood to mean, “learn to ask”. Knowing what we don’t know is a prerequisite to knowing what to ask, only when we are both the person who asks and answers these questions. On the other hand, when the scope of knowledge is narrowed down surrounding my research area, I need to be confident and have bold ambition to be the pioneer and world leader.

Could you describe any one event that has contributed to your progress in your research study life or research area?

Cheong Lai Hong: I don’t recall any special single event, but I do find attending seminars usually gives me unexpected and helpful insights for my research. The seminar topics need not be related to my research. During the questions and answers time, good questions and responses help me to refine my own research by asking and preparing answers to similar questions that I should have answers to.

In your opinion what qualities are needed to be a good research student?

Cheong Lai Hong: As I have mentioned, to be humble and proud.

And

Chen Yifan

Looking back at your personal learning journey, when did you first discover that you were ‘different’ from the majority of your classmates? Tell me about your educational journey.

Chen Yifan: I realized that I was always driven by pure curiosity to know some truth as early as my primary-school hood. My father, who gave me a lot of freedom and independence to explore whatever interested me, sparked my early interest in maths and physics. Due to the heavy workload in my secondary school and high expectations from young Chinese parents, most of my classmates were forced to strive always to obtain high academic grades, which has inevitably and sometimes irreversibly, turned off the pure interest for the unknown of many of my friends. I was fortunate that I could balance quite well between my personal pursuit for the ‘functionally useless’ knowledge and my academic results. The former finally motivated me to further my studies to the PhD level.

During my secondary school, I spent a lot of time reading scientific articles that reviewed leading-edge technologies and theories. Although most of the time I could only comprehend them through my limited understanding, they nevertheless aroused my strong interest in exploring the mysterious truth. I am also grateful to my undergraduate time in NTU, where I have been exposed to many resources in the two libraries and vibrant ideas from many professors, which paved the way for me to a life as a PhD research student.

Why did you choose to further your studies to the PhD level?

Chen Yifan: There are three main reasons. First and most importantly, PhD study is the most natural and convenient way for me to materialize my dream of being a noise generator, being free to share with others many ideas, and being excused to make stupid mistakes, though this could be constrained in a certain sense, whereas working in the industry is a completely different story. It is not uncommon that in the company, one would be boxed in a small volume without much freedom to do what really interests him. Secondly, I also feel that the training in PhD courses is complementary to that in undergraduate courses. The former builds one up as an independent researcher with the ability of identifying, analysing, and solving new problems whereas the latter usually lacks in the aspect of guiding a student to spot a problem himself. Finally, like it or not, a PhD degree is the passport for anyone who wants to work in the academic field.

Describe your experience at the university (where you’ve been). How different were your experiences there, as compared with NTU, in terms of their challenge to personal growth and development?

Chen Yifan: I entered Tsinghua University in 1997, and then left three months later after receiving a scholarship from Singapore MOE. I received my Bachelor of Engineering Degree from NTU in 2002.

Based on my short experience in Tsinghua and feedback from my former classmates there, the university has a clear focus in helping students to develop a mathematical mind, in other words, to be able to carry out theoretical abstraction of real engineering applications. This helps their graduates to be strong in mathematical foundations and analysing skills, which is certainly beneficial for their future academic life. Whereas the educational philosophies of NTU are rather application-oriented, this is helpful in training practical engineers, but may not be advantageous in building theorists.

Describe briefly the focus area of your PhD research and the achievements that you have made to date? Why did you select this area? How do you sustain your interest and motivation?

Chen Yifan: My research area is on channel characterization for emerging wireless communication systems, such as ultrawideband (UWB) technologies and multiple-input-multiple-output (MIMO) systems. We have published four papers in refereed international journals and eight papers in international and regional conferences. Due to the prospect of significant improvements of system performance for these technologies, considerable interest has been drawn to these areas in the past few years, and we hope that our proposed models will be helpful in developing a deeper insight into these areas. I am not worrying too much about losing interest or motivation because “the great ocean of truth lay all undiscovered before me” (Isaac Newton).

Could you describe any one event that has contributed to your progress in your study life or research area?

Chen Yifan: Iron sharpening iron. Every single comment on my work from my advisor, from the referees of my papers, or my fellow lab mates is a great reward for my study life, whether it is a kind encouragement or a critical repro. From my personal experience, I also feel that it is a tougher journey and usually takes a much longer time for a Bachelor degree holder to “behave like” a PhD candidate as compared to those with a Masters degree. We all struggle with exhausting our ideas, and not knowing the right direction. I do wish that each of us would really enjoy the three years’ life with a sense of achievement.