Statement of Research Interest

My name is Kuanghua Qiao. My main research interest is embedded hardware/software and low power mixed-signal Integrated Circuit Design. I am writing to express my interest in pursuing the MASc at Department of Electrical Engineering & Computer Science of York University. I am excited by the prospect of performing research and broadening my knowledge of Integrated Circuit design, and I believe I would make an excellent master candidate. Professor Ghafar-Zadeh and I have discussed about the available master position in BioSA research group. As he found me a qualified candidate for this position, supporting my application, he has agreed to be my master supervisor should I be accepted.

I am passionate about embedded system and Integrated circuit design. During my time as an undergraduate student I have been working in BioSA laboratory under professor Ghafar-Zadeh’s supervision for 2 semesters, and it was a really good time collaborating with him. For my first project I participated in the *Age-Related Macular Degeneration Diagnostic Tool: Hardware and Software Development.* In this project, I developed a wireless input apparatus that can capture hand gestures. The resulting device can recognize two distinct hand gestures made in real-time with an accuracy of 82%. The second project I is *A Non-Invasive Wireless Respiratory Monitoring System for Animals.* In this project, I Designed a biomedical device to noninvasively monitor a dog’s breath rate with 99.7% accuracy using a piece of conductive fabric and wireless technology to remotely monitor breath rate in an undisturbed environment. The research was showcased in Lassonde Undergraduate Research Conference 2018. Finally, I participated the *Core-CBCM CMOS Capacitive Sensors for Life Science Applications* project. In this project, I built a test platform for the capacitive sensor designed by another PhD student. The test platform includes a PCB interface, a microcontroller that generate the test signal and a python test script that has a GUI. Through the series of projects, I’ve done in the BioSA laboratory I have gained a well understanding of all aspects of embedded system design including microcontrollers, serial communications, power supply modules and PCB design. However, I would like to dig deeper into the integrated circuits that I worked with when designing a PCB. Including how they are their design, analysis and testing methodology; And the tools involved such as FPGA and Cadence.

I have also passed most of the related electronics courses with good grades such as EECS3611 Analog Integrated Circuit Design, EECS3612 Sensors and Measurement Instruments and EECS4421 Introduction to Robotics in which I got an A. However, I do not meet the B+ average for admission. That is because of two major reason: 1) the depression cause by my relationship with my friend and family issues; 2) the unstructured course offered to the first generation of electrical engineering students. I did make an effort try to boost my grade in year 2017 and 2018 but was not quite successful as the depression persisted for a while. These problems will no long trouble me if I am to do a graduate degree. I have earned some money through working and adjusted my mindset and I will be ready for furthering my academic achievement.