**STATEMENT OF PURPOSE**

 I am interested to pursue a Sc.D. degree in Computer Science from the University of Massachusetts Lowell. I have recently acquired a Master’s degree in Computer Science from the University of Massachusetts Lowell. My past experiences with the academia and its fertile learning environment, have stimulated me to pursue doctoral research in this school.

 The most endearing feature of Computer Science is its rich amalgamation of Physical and Mathematical Science. My first introduction to Computer Science came in higher secondary school, with Computer Science as a vocational subject. What appealed to me most was its role in bridging the gap, between the *abstract* and the *manifested*. As a step forward, I joined the Computer Engineering program at the University of Mumbai. During the program, I played with *physical* electronic components and dabbled with digital design, in the Electronics lab.

 This coupled with courses like, Operating Systems - that deal with *running* the hardware, fueled my interest in systems engineering, which I would like to call *platform engineering*. In the latter years I played with microprocessors, like the x86 family, and did projects involving direct machine programming. In the final year, I took Microcomputer System Design, as an elective course. In this course I learned to design microcomputer-based computer systems, catering to user specifications. Advanced Computer Architecture was my second elective course. In this course, besides studying supercomputer architectures, I studied the intricacies involved in designing high performance, efficient computer systems.

 After graduation, I realized that I was actually only getting started on my research interest in Computer Science. That I wanted to go the distance and pursue higher studies in Computer Science propelled me to apply to the Master’s program.

Soon I applied for and got admitted to the Master’s program in Computer Science at the University of Massachusetts Lowell. The three well spent academic years, here, have been instrumental in laying the foundation, and providing enough motivation for me, to pursue research. Courses like Operating Systems, Computer Architecture and Compiler Construction, provided me with in-depth knowledge of systems and system software internals. However, my research interest in platform engineering was fueled primarily in the Robotics-I course, offered in spring 2003 by Prof. Fred Martin. This course introduced me to Embedded Systems and challenged me with issues faced in embedded systems design.

 I developed interest in Embedded Systems, as a platform engineering discipline. During the course, I was involved in a project titled - *iCricket*. This project provided a web-interface to the Handy Cricket embedded system. Using iCricket, a user can remotely control a sensor/control application, over the internet. During the summer after graduation, I began working on porting the Handy Cricket Virtual Machine, from PIC-assembly to MSP430-assembly. This project also involves integrating a complete TCP/IP stack into the new MSP430 port of the virtual machine. Once completed, it will enable users to create distributed sensor/control Handy Cricket applications.

 I would like to pursue research that will solicit the involvement of Computer Architecture, Embedded Systems, Operating Systems and Distributed Systems. I would like to contribute to each of these fields during my research. My primary research platform, however, will be Embedded Systems. I would like augment my research work with embedded system prototyping, as proof of concept instruments.

 Ubiquitous computing is fundamentally characterized by *engaging computing* with the real world. It is a very difficult integration of human factors, computer science, engineering, and social sciences\*. I am interested in ubiquitous computing as applied to embedded systems. Embedded Systems enjoy strong presence in the field of *wearable computers*, an instance of ubiquitous computing. I would like base my research on designing cost-effective low-power wireless sensor networks, using embedded systems. Based on the proven user-friendly interface of the Handy Cricket, I would like to commence my research work by studying the effectiveness of Handy Cricket based wearable computers over wireless media. Such a system, equipped with sensors will aid in remotely sensing/controlling distant environments. There is already substantial research and development in wireless sensor networks. I believe, however, that a wireless Handy Cricket based wearable computer will provide the most cost-effective solution to today’s wearable computing needs.

 As part of my preparatory phase, I am already in the process of preparing for the Sc.D. qualifier exams. Currently I am being my own teacher and will soon be starting a study group of like-minded fellow computer science Sc.D. aspirants.

 My ambition is to head a Research and Development firm involved in designing embedded systems that will borrow heavily from my research work. I would like to leverage the knowledge and insight gained from a Sc.D. degree at University of Massachusetts Lowell, to further this ambition and make it a reality.

**Kallol Par**

**M.S. (Computer Science)**

**University of Massachusetts Lowell**

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