Letter of Motivation
Mr. Kaushik M.K.
Applying for Masters in
Autonomous Systems
For the Winter semester of 2018

Autonomous systems is a unique masters course that amalgamates cutting edge topics of electrical engineering and computer science. Bonn Rhein Sieg university of applied science pioneers in this filed and I prefer the Bonn Rhein Sieg university of applied science for my future scientific explorations. Autonomous systems holds the key to next generation of industrial revolution and will influence every aspects of life. It has already made a mark in manufacturing sector, applications like self driving cars are become part of our daily life because of the technological advancements in this domain. I was always fascinated by science, it provides a framework to understand nature by providing a set of laws which are can be verified by anyone. Application of science to create technology which enables people to accomplish more is one of the most thrilling aspects of science. It was this drive to explore more on the scientific applications made me to choose Electronics and Communication engineering in Sri Jayachamarajendra college of engineering. The use of one of the most abundantly available element, silicon to create electronic devices that formed the basis of today's Information Technology world is absolutely amazing. Hardware and software engineering forms the basis of autonomous systems, and this programme will allow me to gain proficiency in both the fields.

My hunger to obtain practical experience led me to internship at Center for Nanoscience, Indian Institute of Science under Professor Dr. Vijay Mishra, where I developed firmware for sending the data acquired by the Envirobat project to a usb enabled device. The microcontroller that was used in the envirobat had excellent data acquisition and signal processing capabilities but lacked the usb hardware. I developed the module using Vinculum V2-DIP2-32 microcontroller. While working at IISC I understood new research methodologies which replaced mundane work, dynamic experimentation, lateral thinking, collaboration with researchers from different fields, constant questioning of existing techniques ingrained in me. The data that was acquired by the envirobat was used to understand the concentration of different chemicals in the air, thereby providing key insights to the quality of air and revealing causes of many problems. My work at IISC deepened my understanding of embedded systems and during this time I found out that my passion lies in design and development of products, Autonomous systems masters will impart me the knowledge on new domains like artificial intelligence, computer vision and robotics which I can combine with my existing capabilities to develop new products which can be in wide array of fields.

With the experience that I acquired during my internship at IISC, I realised that there is lot of gap between academics and industry, me and my friends decided to start a startup called [Grape](#) [Labs](#) which is focused at reducing this gap by providing training to engineering students in several technologies. I was involved in the creation of the ATmega16 microcontroller board, sensor boards and hardware modules which we used to train the students. We conducted workshops in SJCE, MIT, ATME colleges and in IETE Mysore, further we developed an array of educational apps which has crossed 20,000 downloads in google play store. We are targeting to reach more students in 2019 and also extending our educational apps to ios platform.

My college had a noble tradition of seniors transferring knowledge to juniors using IEEE-Electronics Devices Society events as a platform. Starting from first semester I started actively participated in all the events and during later semesters I became integral part of IEEE-EDS by becoming the board member. I continued the tradition started by my seniors by taking sessions in Practical Electronics which aimed at introducing simple electronic circuits which is used in our day to day devices. I also took sessions on analog electronic circuit designs and microcontroller programming in Vacation Project mania during my 6th semester holidays. I also conducted Ennovation a circuit design competition, all these activities diminished my stage fear and improved my presentation skills.

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In my final year I decided to work on optical character recognition of musical symbols. Music score recognition is challenging since it carries a different meaning depending on its position on the staff line, also time signature, key signature, pitch and many other parameters comes into picture. All these combinations adds to the complexity of the project. The implemented project supports the playback of recognized music with 10 different instruments such as guitar, violin, mandolin, melodica, banjo, koto, kazoo, electric guitar, sitar, mezzo-soprano using musescore software. The main motivation behind the project is to develop software like "Cam Scanner" for musical score sheets that can be used by learners,professional musicians and publishers with ease. The project allowed me to understand the principles of character recognition and applications of signal processing techniques along with good understanding of programming techniques.

To strengthen my knowledge on software development, I choose to work at Y-MediaLabs, Bangalore, India. During my tenure at YMediaLabs I attained proficiency in web application development, my work involved developing user interfaces with cutting edge technologies. Alongside gathering expertise with HTML, CSS and Javascript I also acquired skill of quality code and perfect logic. I was part of small sized teams which enabled me to work on critical parts of the application and I also learnt the art of delivering high quality products in the stipulated time frame. My experience in the company taught me that developing a product is not only about coding, it's about understanding the pulse of the customer and providing a solution which will have long lasting impact on the business. I was involved in multiple interactions with clients where in I took the leadership and suggested ideas which could enrich the user experience and inculcating new technologies which could improve the product. These situations amplified my interpersonal skills and took my confidence to the next level. Javascript which can be run on web, server, mobile and on desktop allowed me work and understand the development principles of these platforms. Using javascript technologies like angular and react, I worked on development of large scale enterprise web applications for multiple clients.

Computer science department in Bonn Rhein Sieg university of applied science offers many multidisciplinary courses thereby students are given an unique opportunity to work with intellectuals from different academic disciplines, this brings a plethora of ideas to table which fosters innovation. Hence, Bonn Rhein Sieg university of applied science is the perfect and the only place for me. I firmly believe I can also contribute to Bonn Rhein Sieg university of applied science in creating a scholarly environment that inspires intellectual inquisitiveness. Bonn Rhein Sieg university of applied science has the state of the art research facilities, it has faculties who have extensive experience in industry and in research. The university has produced groundbreaking innovations in the past and open mindedness to new ideas has enabled individuals to come up with new technological breakthroughs. The most impressive feature is the importance given individual strengths, opportunity to work on non conventional areas , thus creating new prospects of science and technology which are very important to the future of humanity. I am in search of deep expertise and have decided to pursue specialized Autonomous systems masters in Bonn Rhein Sieg university of applied science. Structured curriculum, interdisciplinary courses, international exposure, affiliation with industry, world class research and an opportunity to collaborate with top notch students, has made to choose the university. I am definite that this course will provide me an opportunity to use my internal talent to prove my capabilities and contribute to make the world a better place.