Dear Dr. Zhong,

I am applying for the postdoctoral research position (PV1732) available within your group that was advertised in CMRI’s website. I am currently doing a machine learning research internship at Canon Information Systems Research, Australia under the supervision of Dr. Nagita Mehrseresht (Principal Research Engineer) and Dr. Jeroen Vendrig (Research Manager). Additionally I am on a program leave from the final phase of my PhD in Computer Science in the University of New South Wales, Canberra under the supervision of Professor Tapabrata Ray and Dr. Hemant Kumar Singh. I have successfully carried out several projects in the area of optimization, machine learning and data analysis using the state of art programming languages such as python and MATLAB. Please take note that in the event I am successful to get the position, I will be able to start from April, 2018 at the earliest.

Despite having little knowledge about proteomics, I can confirm that I deal with large data on a daily basis and formulating a physical phenomenon with lots/little data into a machine learning/optimization problem is what interests me.

During my internship period, I am involved in a project of action understanding from videos which involves handling large amount of video data and devise machine learning techniques to solve the problem. I am using LSTMs, CNNs within TensorFlow environment in Python to tackle this problem. Additionally I am also looking into learning to learn the optimizer used in machine learning problem to improve the learning process.

During my PhD tenure, I have developed several nature-inspired algorithms to deal with computationally expensive optimization problems occurred in engineering domains such as flapping wing design, ship design, wind farm layout design etc. I have extensively used data driven surrogate assisted and multi-fidelity techniques to learn the design landscape quickly with 30% reduced computational burden on practical problems.

Additionally, I have attracted several international and domestic funding such as I was a partner investigator in **Australia-Germany Joint Cooperation Grant** (Singh, Bhattacharjee, Ray, Mostaghim, Moritz) on “Identification of solutions of interest to aid evolutionary multi-objective optimization and decision- making” awarded by **Universities Australia** and **DAAD** for 2017-2018 (23.5K AUD) and I was one out of the three recipients (worldwide) of 2016 **IEEE CIS Graduate Student Research Grant** (2.6K USD) which allowed me to visit Professor Qingfu Zhang’s group in the City University of Hong Kong for two weeks. I have served as a member of the Program Committee of a number of premier international and local conferences in the field of artificial intelligence and as a regular reviewer in top journals such as IEEE Transactions on Evolutionary Computation, IEEE Transactions on Cybernetics and many more. I have authored/co-authored 1 book chapter, 7 papers in peer reviewed journals, 4 peer reviewed lecture notes and 4 peer reviewed conference papers in the last three years.

The reason, I want to join in your lab is to improve my skills and make my first step in medical research. I have been working in engineering domain so far and solved several challenging problems by developing novel computational tools. I want to bridge the gap that exists between medical and computer science domains. I feel that, there is so much to investigate and achieve in healthcare using machine learning and optimization techniques that can directly help numerous doctors and patients beyond conventional approaches.

Finally, I want to thank you for your time and consideration and I look forward to hearing from you.

Thanks and best regards

Kalyan Shankar Bhattacharjee

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