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DeepMind
DeepMind, UK

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Dear DeepMind Hiring Manager,

I am an MEng finalist at the University of Cambridge, specializing in Information and Computer Engineering, Control Systems and Computational Neuroscience. I am writing to apply for the *Research Engineer, Language* position starting in summer 2020.

Having started my degree with General Engineering, with the intention to gain knowledge across different disciplines, I soon realized the diverse fields of problems which can be tackled through data driven methods. My mathematically and logically rigorous approaches, developed partially through the courses at Cambridge, but also through working within industry research groups, have enabled me to achieve critical understanding of state-of-the-art research, modifying and adapting their methods to solve my own problems.

During my most recent internship as a Machine Learning Research Engineer at *Onfido* (a leading deep-learning based identity verification company), working within the document fraud team, my research efforts focused on machine learning and computer vision methods to develop a fraudulent font detection network. A major challenge was to make a generalized framework from very scarce fraudulent data. My iterative data collection and validation approach improved the model performance from 60% to 98%, utilizing a novel transformer network, random forest and Gaussian Processes, along with finding semantically consistent landmarks on fonts. Due to the mission critical nature of identity verification, I have learnt the importance of rigorously verifying the model, questioning and discussing assumptions at every step of the project, and providing confidence estimates on well calibrated models. The most enjoyable part of the job was the discussions with colleagues during paper reading and white boarding sessions, where we challenged not only public research papers, but also each others' approaches, sharing expertise across projects.

Along with researching methods to improve existing machine learning models, my understanding in low level computer vision, Information Theory and hardware description language allows me to provide novel and efficient solutions when learning approaches are infeasible. During my previous internship at ARM, I was tasked to improve the production flow of the Hardware Verification team. By deriving mathematical metrics and using data mining techniques, I was able to come up with a Python application that can reduce a day's worth of debugging down to a few minutes. My work was presented to all senior managers and is currently under patent application. During my internship at Chenyey (an X-Ray image analysis company), I helped developing algorithms for cross-predicting contaminants from different camera angles and measuring flow rate of images, which are both in production.

Through my internships, I have learnt to balance between diving deep into the problem and providing immediate values to the company by bringing scalable and robust solutions to production. I hope to use the knowledge and skills I have gained in the past to further impact and explore the world as part of DeepMind. Thank you for taking the time to consider my application.

Yours sincerely,

Tom Xiaoding Lu