https://findanexpert.unimelb.edu.au/profile/351-james-bailey

Dear Professor James Bailey,

My name is DONG Meiyi, and I have earned a MSc Multimedia Information Technology degree horned “Distinct” at the City University of Hong Kong in 2024. I am writing this mail to apply for a PhD place in your research team.

My research passion revolves around Machine Learning & Deep Learning, especially about the algorithm and practical application. In 2022, while I attended the lecture on the Basic of Artificial Intelligence in the college, I discovered my interest in AI technology and research. This directly motivated me to pursue a master’s degree to further study professional skills and knowledge on AI after working as a software engineer for a year. During my postgraduate study, I have studied the mathematical principles and coding of machine learning algorithms, data mining technique and cyber security algorithms. I have completed five personal research projects. Among them, the most important one is that I utilised the Deep Learning framework to build the accurate and interpretive disease diagnosis model for aging adults. Through a series of investigation and experiments, I have found that Transformer has high accuracy and good stability in leveraging human gut microbiome data for disease diagnosis on specific diseases. I also successfully applied MK-MMD from the deep adaptation network as an additional loss amount to slightly improve the generalization ability of the model in cross-domain data sets. This construction of the disease diagnosis model improved my practical skills in using high-dimensional data and deep-learning algorithms to build classifiers. This experience prompted me to carry out research on the application of deep learning in other areas during my PhD studies. Right now, I am working as a senior algorithm engineer for the AI Lab department in BYD, one of the biggest E-Vehicles manufacturers around the world. I am currently developing the road surface recognition system with multimodal data including the tyre noise and images using deep learning algorithms including TDNN and CNN, etc.

For my PhD research, I aim to focus on the research about the multimodal emotion recognition system based on deep learning and data fusion technology to solve the currently existing problems, such as the complexity of cross-modal data fusion, the difficulty of emotional recognition due to the diversity of emotion expression and individual difference and the high requirements for real-time emotion recognition in specific scenes.

However, this research will be complex and require extremely careful design. After a long time of search and investigation, I have found you with Profound knowledge and outstanding contributions to Artificial Intelligence. For example, in your paper *Predicting 30-day readmission following total knee arthroplasty using machine learning and clinical expertise applied to clinical administrative and research registry data in an Australian cohort*, you developed a risk prediction model using machine learning and clinical insight for 30-day readmission in primary TKA patients, providing great reference value in study design and data analysis. Moreover, your rich publication experience can guide me to search the literature and write PhD research papers.

Overall, I firmly believe that an expert with valuable experience like your could give me precious instructions and help me successfully complete the doctoral research, and your extensive contacts in the information technology industry will assist my transfer of the research results into practical applications. I am grateful for your time watching this mail and hope you can consider my request. Looking forward to discussing the application with you in greater depth.

Yours sincerely,

DONG Meiyi