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Admission Committee
University of Luxembourg
Department of Computer Science
Faculty of Science, Technology and Medicine (FSTM)

Dear Members of the Admissions Committee,

I am writing to express my strong interest in the PhD position in Topological Deep Learning at your university. With a Master's degree in Computational Mathematics, extensive hands-on expertise in AI-driven medical image analysis, and a deep passion for topological/geometric frameworks in deep learning, I am excited about the opportunity to contribute to your research program.

During my Master's studies (2019-2022), I specialized in Generative Adversarial Networks (GANs) with a focus on style transfer learning for personalized Chinese handwritten characters. This project not only sharpened my technical skills but also reinforced my ability to apply innovative computational methods—capabilities that will significantly benefit your group's research in state-of-the-art deep learning and its interdisciplinary applications.

As a research assistant at Sun Yat-sen University's Computational Medical Imaging Lab, I led two interdisciplinary projects that combined deep learning with clinical diagnostics. I developed a multi-task learning model to classify the severity of Placenta Accreta Spectrum Disorder using T2-weighted MRI images, achieving an AUC of 0.80. Additionally, I designed a CNN-based system to predict breast cancer metastasis in Sentinel Lymph Nodes via dual-energy CT scans, attaining an AUC of 0.85 in cross-validation. These projects enriched my expertise in medical image analysis and deep learning, while also honing my skills in AI-driven research design, scholarly review, manuscript preparation, and interdisciplinary collaboration.

I am particularly drawn to your program's emphasis on topological frameworks, which perfectly aligns with my ambition to advance abstract theoretical analysis in deep learning. During my PhD, I plan to: (1) Stay current with the latest advancements in Topological Deep Learning; (2) Develop innovative topological deep learning frameworks; (3) Collaborate with interdisciplinary teams to apply these frameworks to practical problems; (4) Publish my findings in leading AI/ML conferences and journals.

A PhD at your university provides the ideal environment to advance my academic goals and enhance the precision of models for predicting complex systems. In the long term, I aspire to lead research in topological and explainable AI models, and I am enthusiastic about the prospect of working with a diverse team of researchers.

Thank you for considering my application. I look forward to the opportunity to discuss how my background and research interests align with your department's strategic objectives.

Sincerely,

Hai Jiang