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대학원(석사·박사·석박사통합)
학위논문연구계획서

경유	지도교수	주임교수

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연구예정기간	2024 년 03 월 ~ 2025 년 01 월				

논문제목	국문	CUDA기반 병렬처리를 통한 동물대체 인실리코 약물 심독성 예측 효율성 증대
	영문	Enhancing the efficiency of animal-alternative in silico drug cardiotoxicity prediction through CUDA-based parallel processing.

연구내용	Current drug discovery methods, which rely heavily on animal testing, face ethical concerns and limitations in accurately predicting human drug safety. In recent years, in silico (computer-based) methods have emerged as a promising alternative. However, their efficiency is often hindered by the complexity of simulating biological processes, and large samples that being processed. This research proposes a novel approach to address this challenge by leveraging the power of CUDA-based parallel processing on Graphics Processing Units (GPUs). This research will develop a CUDA-based O'Hara-Rudy cardiac cell model. The research will explain the simulation protocol, the cardiac cell model, and how to solve ordinal differential equation used in the cardiac cell model. Due to different hardware architecture in GPU, some modification will be introduced. We proposed a shared pool memory between GPU cores, so each GPU core will handle exactly one sample of cardiac cell parameter set, while maintaining value sharing capability. In the end, the whole modifications will be delivered in containerization using docker.

※ 연구내용은 300자 이내로 간략하게 기술할 것.

상기와 같이 대학원(석사·박사)학위 논문계획서를 제출합니다.

2024 년 03 월 12 일

제출자 Iga Narendra Pramawijaya 인

대 학 원 장 귀하