Carnegie Mellon University College of Engineering

THESIS

Submitted in partial fulfillment of the requirements

for the degree of Doctor of Philosophy

Qiyun Xu Name Materials Science and Engineering Department Final/Defense		qiyunx		
		Andrew ID		
		and Department (if joint)		
		December 9, 2022 Pass	Fail	
Milestone		Exam Date	_	
Туре	Print Name	Authorized Signature	Affiliation	
Position				
Position				
Member	Prof. Marek Skowronski		MSE, Advisor	
Member	Prof. Lisa Porter	M Pu	MSE	
Member	Prof. Paul Salvador	law &	MSE	
Member	Prof. James Bain	C) AB	ECE	
Member	DerChang Kau	Meda 2x2.	Intel Corporation	
Member				
	Shelley Anna,	Associate Dean for Graduate and Faculty Affairs	Date	

Notes/Comments