Copyright Release

I, Ting Ge, as the author of the dissertation, grant Virginia Tech the right to display or copy part or all of the dissertation, in all forms of media, for use within Virginia Tech, and to make available the dissertation to other persons or organizations being either educational or industrial, for reference purposes or for other legitimate education purpose.

Chapter 2 has been published in


Ting Ge

Virginia Tech

July 31, 2018