University of Victoria | Graduate Studies

Notice of the Final Oral Examination
for the Degree of Master of Applied Science

of

SMARAK ACHARYA

BE (Visvesvaraya Technological University, 2011)

"Cellular Automata Pseudorandom Sequence Generation"

Department of Electrical and Computer Engineering

August 16, 2017
1:30 P.M.
Engineering Office Wing
Room 430

Supervisory Committee:
Dr. T. Aaron Gulliver, Department of Computer and Electrical Engineering, University of Victoria (Supervisor)
Dr. Daler Rakhmatov, Department of Computer and Electrical, UVic (Member)

External Examiner:
Dr. D. Michael Miller, Department of Computer Science, UVic

Chair of Oral Examination:
Dr. Karen Courtney, School of Health Information Science, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

Pseudorandom sequences have many applications in fields such as wireless communication and cryptography. Maximal length sequences (m-sequences) are the commonly employed pseudorandom sequences because they have ideal randomness properties like balance, run and autocorrelation. However, the linear complexity of m-sequences is poor. This thesis considers the use of one dimensional Cellular Automata (CA) to generate pseudorandom sequences that have high linear complexity and good random-ness. The properties of these sequences are compared with those of the corresponding m-sequences to determine their suitability.