Wireless Multimedia Sensor Networks on Reconfigurable Hardware

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To Grace Ang Yi-en, our blessed daughter for all the joy you bring.

–Li-minn Ang and Kah Phooi Seng

To my parents for your unconditional love and never ending support.

–Li Wern Chew

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–Lee Seng Yeong

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–Wai Chong Chia

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Acronyms

AIM	Attention based on information maximization
CS	Center surround
DWT	Discrete wavelet transform
EX	Instruction execution
EXMEM	Instruction execution and memory access
FOV	Field of view
FPGA	Field-programmable gate array
ID	Instruction decode
IF	Instruction fetch
MCH	Multimedia cluster head
MEM	Instruction memory access
MIPS	Microprocessor without interlocked pipeline stages
MSB	Most-significant bit
MSF	Medium spatial frequencies
NCC	Normalized cross-correlation
RAM	Random-access memory
RANSAC	Random sample consensus
SAD	Sum of absolute difference
SIFT	Shift invariant feature transform
SIG	Significant
SOT	Spatial orientation tree
SPIHT	Set partitioning in hierarchical trees
SSD	Sum of square difference
SW	Slepian–Wolf
VA	Visual attention
WB	Instruction write back
WBSME	Wavelet-based saliency map estimator
WMN	Wireless multimedia node
WMSN	Wireless multimedia sensor network
WSN	Wireless sensor network
WZ	Wyner–Ziv