Foreword

I am pleased to introduce to the scientific community and specifically to the body of undergraduate and graduate students in disciplines that relate to signal (image) processing, applied mathematics, biomedical imaging, biomedical engineering imaging technology, and more generally: applied computational engineering the works of Dr. Carlo Ciulla in signal (image) interpolation. These works propose a novel scientific approach to an ancient problem, interpolation. I had the possibility to meet with Carlo at Lane College during the summer of 2008 and had the opportunity to discuss his works and to see manifestly the proposition Carlo had to readapt the math related to signal interpolation with his own thinking and beliefs.

The science in this book is made following the style most common to academia which is that of developing novel concepts supported through mathematics and to converge to a unifying theory.

I had the possibility to see through his way of thinking of science and noticed that his approach is made through deduction versus hypothesis testing. The school of thought that drives the development of the science in this book is addressing the undoubtedly challenging task of teaching students how to do research. The school of thought and the science proposed in this book are therefore correlating with each other and tracing the pathway that Dr. Carlo Ciulla follows along while employing his general view on how teaching should be conducted. The pathway to teaching is well accepted here at Lane College from his students and colleagues.

The task addressed while employing signal (image) interpolation relates strictly to sampling theory wherefore analog/digital conversion is necessary to make a continuous signal a discrete one. In the quest for the validation of the mathematical assertions made through the unifying theory, this book addresses the specific case of Magnetic Resonance Imaging (MRI). Nevertheless, while proposing innovation the true underlying task that the manuscript addresses, is certainly related to handling algebra and calculus. This fact is quite relevant to students interested in deepening their understanding of these disciplines while viewing the wider panorama displayed through a diagnostic radiology application as relevant as MRI is in modern days. The benefits provided through the book can also be appreciated from audiences in the interests, but not limited to applied computational engineering.

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of Education of Vocational Schools in New Jersey, USA. In 2000, Abraham was appointed assistant professor of physics at Lane College, Jackson, TN. In 2007, Abraham received an additional faculty training at the University of Oregon. Professor Abraham has taught a variety of courses in physics with calculus, electronics, classical mechanics, thermal physics, mathematical physics, electromagnetism, quantum mechanics, physical science, and college algebra. He has authored 5 journal publications and supervised the theses and dissertations of three graduate students. In the year 2008, Abraham was awarded "Professor of the Year" at Lane College.