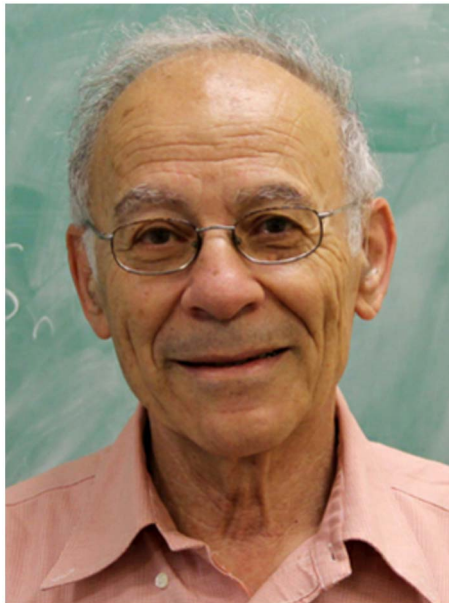# Preface of special issue dedicated to Professor Avner Friedman's 90th birthday

JONG-SHENQ GUO, BEI HU, ROBERT JENSEN, AND STEPHEN S.-T. YAU

This issue of *Communications in Information and Systems* celebrates the 90th birthday of Professor Avner Friedman and honors his contributions to mathematics in both research and service. Professor Friedman has written 540 papers in mathematics both individually and in collaboration with many other mathematicians, including H. W. Alt, A. Bensoussan, H. Brezis, L. A. Caffarelli, L. C. Evans, D. Kinderlehrer, P. L. Lions, W. Littman, and B. McLeod. His papers have appeared in prestigious journals, including *Acta Mathematica*, *Communications on Pure and Applied Mathematics*, *Duke Mathematical Journal*, and *Archive for Rational Mechanics and Analysis*. In addition, Professor Friedman has mentored 25 Ph.D. students, including the guest editors of this issue of *Communications in Information and Systems*. The guest editors are appreciative of this opportunity to express our admiration of what Professor Friedman has done and our gratitude for his guidance and support.

In 1956 Professor Friedman received his Ph.D. from Hebrew University. He is currently a Distinguished University Professor at The Ohio State University, and was the Founding Director of their Mathematical Biosciences Institute from 2002 to 2008. Prior to that he was Regents Professor at the University of Minnesota, the Director of the Institute for Mathematics and its Applications from 1987 to 1997, and the Founding Director of the Minnesota Center for Industrial Mathematics from 1994 to 2001; a Duncan Distinguished Professor of Mathematics at Purdue University; a Visiting Fellow at Oxford University; a Visiting Professor at Tel Aviv University; a Noyes Professor of Mathematics at Northwestern University; a Visiting Associate Professor at Stanford University; an Associate Professor at the University of Minnesota; a Visiting Assistant Professor at the University of California, Berkeley; a Lecturer at Indiana University; and just after receiving his Ph.D. a Research Associate at the University of Kansas.

Professor Friedman garnered international recognition during his distinguished career. He has given 160 Conference Lectures and 150 Colloquium Talks, including a plenary talk at the Fourth International Congress on Industrial & Applied Mathematics. He has been a member of six committees, chairing four, assembled by the National Research Council to write reports on significant issues connected with mathematics applications and education. And he co-authored two reports published by SIAM.

His research was funded continuously from 1958–2010. He was awarded a Sloan Research Fellowship in 1962. These have been given each year since 1955 to the most promising young scientific researchers. Currently this includes researchers from the fields of physics, chemistry, mathematics, neuroscience, economics, computer science, computational and evolutionary molecular biology, and ocean sciences or earth systems sciences. The awards are very selective. Last year 118 Sloan Research Fellowships were made. He received a Guggenheim Fellowship in 1966. These are given to exceptional scholars, artists, and scientists, based on their prior achievements and extraordinary promise. Typically 175 Guggenheim Fellowships are awarded annually from over 3000 applications. In 1982 he received the Stampacchia prize Scuola Normale Superiore di Pisa. And in 1983 he was given a National Science Foundation Special Creativity Award. The Special Creativity award extends additional funding for an initial research project that is deemed particularly promising. This extension is historically rare, with only about 0.2% of initial grants receiving such an extension. Professor Friedman is currently a member of the American Academy of Arts and Sciences, the National Academy of Sciences, the Real Academia de Ciencias

Exactas, Físicas y Naturales (Spain), and holds an Honorary Professorship at Fudan University, Shanghai.

Professor Friedman's service record is at least as impressive. He has served on the Board of Mathematical Sciences, as Chair of the Board on Mathematical Sciences and Analytics, the Board of Trustees of SIAM, as the President of SIAM, the NRC Commission on the Physical Sciences, Mathematics and Applications, and as President of the Society for Mathematical Biology. He has served on the scientific advisory committees for the National Institute of Standards and Technology, the Center for Discrete Mathematics and Theoretical Computer Science, NISS, the Fields Institute for Research in Mathematical Sciences, Mathematics Across the Curriculum at Indiana University, the William I. Fine Theoretical Physics Institute at the University of Minnesota, and currently the Institute for Mathematical Sciences at the National University of Singapore. Professor Friedman is currently on the editorial boards of

- *Journal of Differential Equations*
- *Stochastic Analysis and Applications*
- *Journal of Mathematical Analysis and Applications*
- *Dynamic Systems and Applications*
- *Surveys on Mathematics in Industry*
- *Russian Journal of Mathematical Physics*
- *Nonlinear Differential Equations and Applications*
- *Communications on Applied Nonlinear Analysis*
- *Journal of Inverse and Ill-Posed Problems*
- *Chinese Annals of Mathematics*
- *Interfaces and Free Boundaries*
- *Chinese Journal of Engineering Mathematics*
- *Mathematical Biosciences and Engineering*
- *Differential Equations and Nonlinear Mechanics*
- *Ukrainian Mathematical Bulletin*
- *Journal of Advanced Researches on Differential Equations*
- *Journal of Partial Differential Equations*
- *Journal of Royal Academy of Science in Madrid*
- *Journal of Mathematics in Industry*
- *Archives of Control Science*
- *Tamkang Journal of Mathematics*

and was previously on the editorial boards of

- *Proceedings of the AMS*

- *SIAM Journal on Control and Optimization*
- *Proceedings of the Royal Society of Edinburgh Section A*
- *Mathematics of Operations Research*
- *Communications in Partial Differential Equations*

GUEST EDITORS:

JONG-SHENQ GUO
DEPARTMENT OF MATHEMATICS
TAMKANG UNIVERSITY
151 YINGZHUAN ROAD, TAMSUI
NEW TAIPEI CITY 251301
TAIWAN
E-mail address: jsguo@mail.tku.edu.tw

BEI HU
DEPT OF APPLIED AND COMPUTATIONAL MATHEMATICS AND STATISTICS
UNIVERSITY OF NOTRE DAME
NOTRE DAME, IN 46556
USA
E-mail address: b1hu@nd.edu

ROBERT JENSEN
DEPARTMENT OF MATHEMATICS AND STATISTICS
LOYOLA UNIVERSITY OF CHICAGO
CHICAGO, IL 60611
USA
E-mail address: rjensen.luc.edu@gmail.com

STEPHEN S.-T. YAU
DEPARTMENT OF MATHEMATICAL SCIENCES
TSINGHUA UNIVERSITY
BEIJING 100084
P. R. CHINA
E-mail address: yau@tsinghua.edu.cn