Here is a new issue of the series whose title is significant “Modeling, Simulation and Applications” triad which defines the stages of the contemporary science. The book title is unusual since it refers to two domains that are usually treated separately. Firstly, we remark that we are faced with a very dense book with a large area of subjects. To see this fact, we give its Contents in an enlarged form since the simple enumeration of the chapters is not significant, in order that the reader can grasp the variety of the included topics:

1) Background Signal Processing. Statistical and Optimization Methods (Fourier and Z transforms, Filtering and Convolution, Random Variables, Random Variables, Maximum Specific Optimization Methods);
2) Speech Modeling (Hydrodynamic Semi-Continuum Vocal Fold Model, Source-Filter of Speech Production);
3) Auditory Modeling (Macro mechanics and Micro mechanics, Specific Effects and their Simulations, Computational Methods of Nonlocal Active Methods);
4) Speech Recognition (Hidden Markov Model, Viterby Decoding);
5) Blind Source Separation and Speech Enhancement (Decorrelation Method, Cumulant Methods, Relative Sparsity and Time-Frequency Methods, Convex Speech Enhancement Methods);

The value of the book is enforced by the fact that each chapter is accompanied with specific sections: chapter summary, MATLAB programs, proposed exercises. It is intended for students at the level of senior undergraduate and beginning graduate ones. The prerequisites of the newcomers in this area are: linear algebra, differential equations, numerical analysis and probability.

As is written in series presentation, it aims to establish a link between mathematical models associated to basic and of interest phenomena and the scientific computing which must certify them. Most of the material included in the book is to be found in various papers and books related to different areas, so the access to them is difficult to the newcomers. The present book is devoted to facilitate the access to this “science”.

It is interesting to mention a fact related to the Preface. Reading the list of colleagues to whom the authors thank, one remarks the presence of highly reputed scientist, such as Stanley Osher, Luis Caffarelli, Emmanuel Candès, Ingrid Daubechies, Peter Lax, Susan Friedlander (to mention some of them). At the same time, some Chinese scientists from USA and China are quoted.

Finally, we think the present volume represents an excellent introduction to this new science.

Reviewer: Dumitru Stanomir (Bucureşti)

MSC:
- 94-02 Research exposition (monographs, survey articles) pertaining to information and communication theory
- 94A12 Signal theory (characterization, reconstruction, filtering, etc.)
- 68T10 Pattern recognition, speech recognition

Keywords:
- Signal Processing
- Probability
- Speech Modeling
- Auditory Modeling
- Speech Recognition
- Blind Source Separation

Software:
- Matlab