



Speech Enhancement: Theory and Practice, Second Edition

Philipos C. Loizou

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With the proliferation of mobile devices and hearing devices, including hearing aids and cochlear implants, there is a growing and pressing need to design algorithms that can improve speech intelligibility without sacrificing quality. Responding to this need, **Speech Enhancement: Theory and Practice, Second Edition** introduces readers to the basic problems of speech enhancement and the various algorithms proposed to solve these problems. Updated and expanded, this second edition of the bestselling textbook broadens its scope to include evaluation measures and enhancement algorithms aimed at improving speech intelligibility.

Fundamentals, Algorithms, Evaluation, and Future Steps

Organized into four parts, the book begins with a review of the fundamentals needed to understand and design better speech enhancement algorithms. The second part describes all the major enhancement algorithms and, because these require an estimate of the noise spectrum, also covers noise estimation algorithms. The third part of the book looks at the measures used to assess the performance, in terms of speech quality and intelligibility, of speech enhancement methods. It also evaluates and compares several of the algorithms. The fourth part presents binary mask algorithms for improving speech intelligibility under ideal conditions. In addition, it suggests steps that can be taken to realize the full potential of these algorithms under realistic conditions.

What's New in This Edition

- Updates in every chapter
- A new chapter on objective speech intelligibility measures
- A new chapter on algorithms for improving speech intelligibility
- Real-world noise recordings (on accompanying CD)
- MATLAB® code for the implementation of intelligibility measures (on accompanying CD)
- MATLAB and C/C++ code for the implementation of algorithms to improve speech intelligibility (on accompanying CD)

Valuable Insights from a Pioneer in Speech Enhancement

Clear and concise, this book explores how human listeners compensate for acoustic noise in noisy environments. Written by a pioneer in speech enhancement and noise reduction in cochlear implants, it is an essential resource for anyone who wants to implement or incorporate the latest speech enhancement algorithms to improve the quality and intelligibility of speech degraded by noise.

Includes a CD with Code and Recordings

The accompanying CD provides MATLAB implementations of representative speech enhancement algorithms as well as speech and noise databases for the evaluation of enhancement algorithms.

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