



Single Channel Phase-Aware Signal Processing in Speech Communication: Theory and Practice

By Pejman Mowlaei, Josef Kulmer, Johannes Stahl, Florian Mayer

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An overview on the challenging new topic of phase-aware signal processing

Speech communication technology is a key factor in human-machine interaction, digital hearing aids, mobile telephony, and automatic speech/speaker recognition. With the proliferation of these applications, there is a growing requirement for advanced methodologies that can push the limits of the conventional solutions relying on processing the signal magnitude spectrum.

Single-Channel Phase-Aware Signal Processing in Speech Communication provides a comprehensive guide to phase signal processing and reviews the history of phase importance in the literature, basic problems in phase processing, fundamentals of phase estimation together with several applications to demonstrate the usefulness of phase processing.

Key features:

- Analysis of recent advances demonstrating the positive impact of phase-based processing in pushing the limits of conventional methods.
- Offers unique coverage of the historical context, fundamentals of phase processing and provides several examples in speech communication.
- Provides a detailed review of many references and discusses the existing signal processing techniques required to deal with phase information in different applications involved with speech.
- The book supplies various examples and MATLAB® implementations delivered within the PhaseLab toolbox.

Single-Channel Phase-Aware Signal Processing in Speech Communication is a valuable single-source for students, non-expert DSP engineers, academics and graduate students.

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- Rank: #5093271 in Books
- Published on: 2016-12-27
- Original language: English
- Dimensions: 9.70" h x .70" w x 6.80" l,
- Binding: Hardcover
- 256 pages

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About the Author

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Dr. Mowlae is a Senior Research and Teaching Associate at the Speech Communication and Signal Processing Laboratory, Graz University of Technology, Austria. He has received several awards including best M.Sc. thesis, awarded by the National Scientific Students' Organization of Electrical Engineering in 2007; and was a member of the organizing committee for the annual European Signal Processing Conference in 2010 in Aalborg and AUDIS workshop 2012 in Aachen. He has contributed over 40 journal and conference articles; he is a senior member of IEEE, acted as a reviewer for a number of journals, and has played an active role in organizing special sessions on the topic of the book at INTERSPEECH conferences. Dr. Mowlae is also Guest Editor for the forthcoming Special Issue in *Speech Communication* (Elsevier) on Phase-Aware Signal Processing for Speech Communication.

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