

# DEVELOPMENT OF A SPEECH ENHANCEMENT ALGORITHM FOR THE INTERVENTION OF PARKINSON'S DISEASE WITHIN THE I-PROGNOSIS FRAMEWORK

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## Introduction

Parkinson's disease (PD) is a hereditary disease of the neurological system that manifests itself in motor dysfunctions through neurodegeneration. Diagnoses are often made only in advanced stages of the disease, because the accompanying symptoms are usually masked in early stages. Since PD cannot be cured, an early diagnosis is important to alleviate the course of the disease and improve the patients' quality of life. *i-PROGNOSIS* is a project funded by the EU "Horizon 2020" programme, which investigates the early detection of PD through the use of intelligent technologies in everyday life in order to mitigate the symptoms through appropriate intervention activities [1]. This poster presents one of the intervention strategies called "Voice Enhancement Intervention" (VEI). It addresses the enhancement of PD patients speech intelligibility by applying signal processing strategies to enhance speech signal clarity and level, as well as reducing the noisiness of the recording. The algorithm is self-regulative and uses an objective measurement of signal modulation depth to estimate speech intelligibility [2] for self-adaptation.

## Intervention Goals

- To motivate patients to use their voice for communication via mobile devices.
- To facilitate the communication via speech by improving speech intelligibility, in an automatic way.
- To establish a larger user community to improve classification results of the *i-PROGNOSIS* early PD detection.

## Results

- Successful Development of the *i-Prognosis* Voice Enhancement App.
- Development of a real-time algorithm with self-regulation based on objective speech intelligibility estimation.
- Promising results are available in a dataset recorded at King's College London Hospital (UK).

## Indicative References

- [1] EU H2020 *i-PROGNOSIS* Project, <http://www.i-prognosis.eu/>
- [2] H. J. M Steenken and T. Houtgast. "A physical method for measuring speech-transmission quality". The Journal of the Acoustical Society of America, vol. 67, pp. 318 (1980).

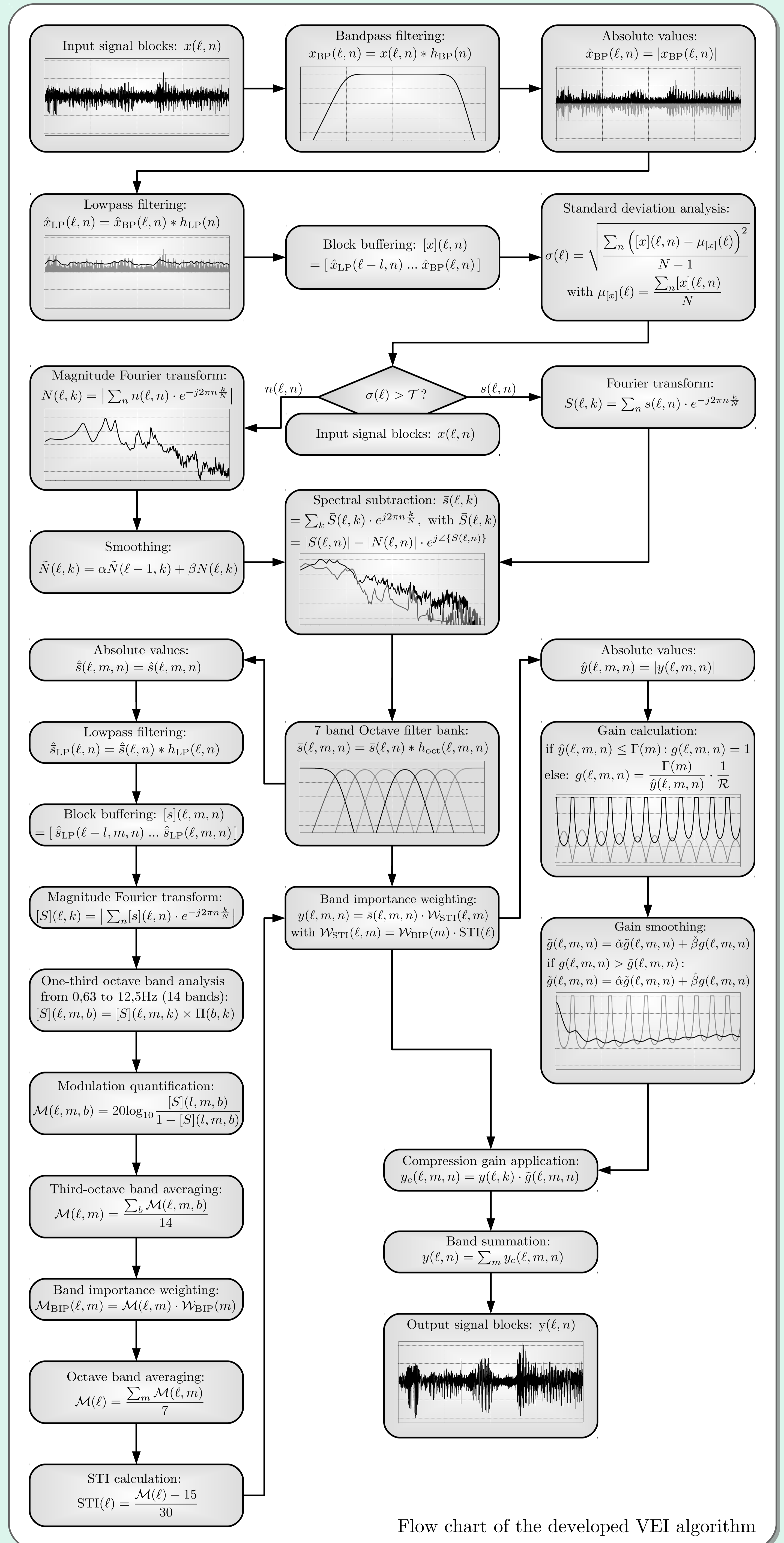
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