

Project for BME MSc students

Analysis of Swallowing Sounds during Breast and Bottle Feeding

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This project is in collaboration with a professional lactation consultant and with

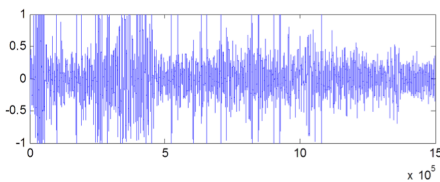
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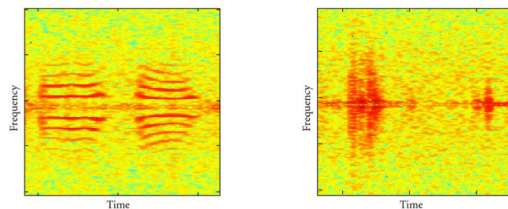
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Overview:

Breastfeeding is a dynamic process, which requires coupling between periodic motions of the infant's jaws, undulation of the tongue, and the breast milk ejection reflex. During breastfeeding, the infant is using his natural reflexes to coordinate between milk extraction, swallowing and breathing. Swallowing is a complex process that involves many muscle pairs. As a result, assessment of swallowing pathologies is problematic both in adults and infants. A potential simple and non-invasive assessment of swallowing difficulties may be by proper analysis of the content of **sounds** acquired from the **throat surface** (i.e., cervical auscultation) during **feeding**. It has been utilized by speech pathologists and lactation consultants, but the evaluation is based on subjective observation. Based on the published knowledge on processing sounds acquired from the body **we wish to develop an objective method for time-frequency analysis of swallowing sounds during infant breastfeeding, on normal subjects and subjects with swallowing difficulties, to better understand the abnormalities and assess improvement over time during mother and infant monitoring.**



Sound recording from an infant during breast feeding.



Time-frequency regions of spectrogram (a) for voiced sound (b) for swallowing vibrations. Image from Orović *et al.* *EURASIP Journal on Advances in Signal Processing* 2010: