



## סמינר משתלמים

You are invited to attend a lecture by

Slava Shechtman

הנכם מוזמנים להרצאתו של

**סלבה שכטמן \***

בנושא :

### Very Low Bit-Rate Speech Coding based on Temporal Decomposition

The Optimized Temporal Decomposition (OTD) technique for Line Spectral Frequencies (LSF) speech envelope representation, under a MMSE criterion, has been shown to be promising for very low bit rate speech coding for storage and broadcast applications.

To improve perceptual speech quality, a dynamically weighted OTD (DW-OTD) technique is introduced in this work. It extends the OTD by allowing temporally changing weights, so as to improve the perceived speech quality. Use of Gardner's weighted MSE with DW-OTD is found to reduce the Log Spectral Distance (LSD) measure by 0.3 dB, as compared to OTD.

The original OTD algorithm delay and complexity requirements make it inappropriate for real-time speech coding. In this work we also introduce a modification of this technique, which is sub-optimal but suitable for on-line speech coding purposes, with only negligible degradation in performance. With the proposed techniques we are able to encode speech spectral envelopes at 300-370 bps, at LSD of 2.25-2.1 dB, respectively. The TD technique is also applied to the excitation parameters (pitch and energy), resulting in a 600-700 bps vocoder based on a Mixed Excitation Linear Prediction (MELP) standard voice coder.

M.Sc. thesis supervised by Prof. David Malah

\* סטודנט לתואר שני בהנחיית פרופסור דוד מלאך

The lecture will take place  
On Sunday, 23.5.2004. at 14:30  
in Room 1061 Electrical Eng. Building  
Technion City

ההרצאה תתקיים ביום א' 23.5.2004  
בשעה 14:30 בחדר 1061  
בבניין הפקולטה להנדסת חשמל  
קריית הטכניון

כיבוד קל יוגש לפני ההרצאה

