

הפקולטה להנדסת חשמל אלקטרוניקה מחשבים תקשורת

## <u>סמינר משתלמים</u>

You are invited to attend a lecture by Michael Lavrentiev

הנכם מוזמנים להרצאתו של מיכאל לברנטייב \*

: בנושא

## Transrating of Coded Video Signals via

## **Optimized Requantization**

Requantization is one of the tools for bit-rate reduction of pre-encoded video to adapt it to various network bandwidth constraints. Several recent works propose using *Lagrangian optimization* to find the optimal quantization step for each coded macro-block, to meet a desired rate at minimum distortion. We propose to extend the Lagrangian optimization procedure by allowing the modification of quantized coefficients index values, including setting their values to zero, in addition to quantization step-size selection. Coefficient index value modification and quantization step-size selection are optimally done using a low-complexity *trellis-based* procedure. The proposed requantization algorithm provides higher PSNR values than the Lagrangian-based optimization method, which only handles the selection of quantization steps, and still does not exceed considerably its complexity. *MSE* and *MAP requantization* methods, which are based on estimation of DCT coefficients distribution, are also examined. *Perceptual masking* (HVS-based), which is based on segmentation and tracking, from frame to frame, of textured regions, boundaries and smooth areas in the DCT domain, is integrated into the optimization procedure. It is found to improve the perceptual quality of transrated video, as measured by a picture quality evaluation (PQA) tool.

M.Sc. thesis supervised by Prof. David malah

סטודנט לתואר שני בהנחיית פרופסור דוד מלאך \*

The lecture will take place On Wednesday, 24.3.2004 at 13:30 in Room 1061 Electrical Eng. Building Technion City

ההרצאה תתקיים ביום די 24.3.2004 בשעה 30 :13 בחדר 1061 בבניין הפקולטה להנדסת חשמל קריית הטכניון

כיבוד קל יוגש לפני ההרצאה

