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SOURCE: National Telecommunications and Information Administration,  
Institute for Telecommunication Sciences  
Boulder, CO 80303  
Edmund A. Quincy  
Daniel J. Tomich  
Robert F. Kubichek  
(303) 497-5472

TITLE: Report on Applications of Expert Pattern Recognition  
Methodology for Assessing Video Quality

#### **ABSTRACT**

This contribution reports on the Institute for Telecommunication Sciences (ITS) presentation to T1Q1.5 of a contribution titled, "Expert Pattern Recognition Methodology for Technology Independent, User Oriented Classification of Video Transmission Quality." Although our main interest is in a more general problem of video quality, this contribution proposes the application of the methodology to video teleconferencing containing moving scenes. We also express an interest in developing a standard project proposal.

## **I. INTRODUCTION**

At the March meeting of TlQ1.5, ITS presented a contribution titled, "Expert Pattern Recognition Methodology for Technology Independent, User Oriented Classification of Video Transmission Quality." This contribution is the same as the contribution (TlY1.1/88-005) presented at the February meeting of TlY1.1. We presented the contribution to TlQ1.5 as suggested by several members of TlY1.1 because of TlQ1.5 interest in video teleconferencing quality. This contribution reports on the presentation and on the comments received by the members of TlQ1.5.

## **II. TlQ1.5 PRESENTATION**

Members expressed interest in the proposed approach and agreed there is need for objective assessment of video image quality. Development of objective techniques is crucial because of the lack of standard subjective assessment methods. The method would be useful in several areas of interest including broadcast television and HDTV, high resolution graphics and facsimile, and video teleconferencing. Several members suggested initially developing the system using small subsets of video impairments because of the broad range of possible distortions. US West representative, Fred Camarillo expressed that this type of scientific approach to the problem should be the thrust of TlQ1.5 and would provide a framework with which to determine performance parameters for TlY1.1.

## **III. VIDEO TELECONFERENCING**

Several members of TlQ1.5 suggested initially developing the system using small subsets of video impairments because of the broad range of possible distortions. Granger Kelley of DCA (also representing NCS), head of the editorial committee for video teleconferencing, and others in TlQ1.5 are particularly interested in applying the methodology to motion quality in video teleconferencing. Although our main interest is in applying the technique to the more general problem of video image quality, there is an immediate need to assess motion quality and we feel this is an appropriate topic to initially address.

During the meeting, Dick Schaphorst of Delta Information Systems (DIS) presented a contribution concerning motion quality. DIS is working on defining test patterns with scene motion which would stress codec performance. We are directing a complementary initial effort toward developing and selecting a set of motion sensitive parameters. Developing an appropriate standard test image sequence and a robust set of motion sensitive parameters are the first two critical steps in developing an expert pattern recognition system for assessing video teleconferencing motion quality.

#### **IV. STANDARD PROJECT PROPOSAL**

ITS is interested in proposing a standard project concerning objective classification of video transmission quality. The standard would define a new methodology for objectively determining video transmission quality that is user-oriented and independent of coding and transmission technologies. The technique would employ an expert pattern recognition system that operates on received image measurements with unknown transmission impairments. The standard would also define an objective video parameter set. We would like to propose this project if there is sufficient interest by the members of T1Y1.1 and T1Q1.5.