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### Edge detection of moving objects in the highly corrupted image sequence

The detection of important features of a moving object is a challenging task especially when these images are corrupted with heavy noise. This research proposes two statistical base techniques. The first technique performs three-way nested design using the analysis of variance (ANOVA). The three-way nested design corresponds to three-layers. The top layer is based on the temporal analysis where the model compares two consecutive image frames and identifies regions having sufficient temporal interframe changes. The next two layers perform statistical approach to see if there are sufficient intraframe variations. A large amount of intraframe variations are accounted for important features that may have edges to track across multiple image frames. In case of affirmative results in all the three layers, a second method based on the contrast function (CF) is used to identify edges in four possible directions. These four directions are horizontal, vertical, and two diagonal directions. The presence or absence of an effect is confirmed by testing a hypothesis. The test uses F-test, and Tukey's T-test. The results are quite good for image frames that are previously corrupted with heavy Gaussain noise.

### Biography

Asim ur Rehman Khan received BSc (EE) from UET, Lahore, Pakistan in 1981. He received MS (EE) from South Dakota State University, Brookings, South Dakota in 1987. He received PhD degree from Polytechnic University, now New York University, NY, USA in 1993. He worked in the Space Agency of Pakistan, SUPARCO, where he worked on the design & development of a small satellite. He has taught courses at SSUET, Karachi University, and NED University in Karachi, Pakistan. He worked in a software house for 5 years, where he was involved in the automation of MCI, USA fiber optic nation wide link. Since 2002, he is teaching at NU-FAST. His principle interests are image processing, network protocols, and network security. He is a senior member of IEEE, and Pakistan Engineering Council (PEC).

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