**A Synopsis on**

**Textural Classification using Transform Domain based Features**

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**INTRODUCTION :**

**Texture:**

The analysis of texture in images provides an important cue to the recognition of objects. It has been recently observed that different image objects are best characterized by different texture methods. Successful applications of texture analysis methods have been widely found in industrial, biomedical, remote sensing areas and target recognition [1] (e.g., Kaplan, 1999). In addition, the recent emerging of multimedia and the availability of large image and video archives has made content-based information retrieval become a very popular research topic. Texture is also deemed as one of the most important features when performing content-based information retrieval (e.g., Chanet al., 1997). Various textural features have been adopted to fulﬁll these applications. Since there are a lot of variations among natural textures, to achieve the best performance for texture analysis or retrieval, diﬀerent features should be chosen according to the characteristics of texture images. A number of texture analysis methods have been proposed over the years and it is well-recognized that they capture diﬀerent texture properties of the image.

Texture analysis methods used can be categorized as statistical, geometrical, model-based and signal processing(e.g., Tuceyran and Jain, 1998). Early works were based on the analysis of statistical properties of the texture which deals with the spatial distribution of gray values. Some statistical methods used are co-occurrence matrix features (e.g., Haralick et al., 1973; Argenti et al., 1990) and auto-correlation function (e.g., Kaizer, 1955). In geometrical methods textures are considered to be composed of texture primitives and are extracted and analyzed (e.g., Tuceryan and Jain, 1990). Several stochastic models have been proposed for texture modeling and classiﬁcation such as Gaussian Markov random ﬁelds (e.g., Cross and Jain, 1983; Rama and Shankar, 1985; Charles, 1995) and spatial auto-correlation function model (e.g., Patrizio et al., 2002).

**Transform domain**

**DWT**

**FFT**

**FT**

**DFT**

**Literature Survey**

Rusmir Bajric at el., 2016, developed Feature Extraction Using Discrete Wavelet Transform for Gear Fault Diagnosis of Wind Turbine Gearbox. That paper investigates a new approach for wind turbine high speed shaft gear fault diagnosis using discrete wavelet transform and time synchronous averaging. First, the vibration signals are decomposed into a series of subbands signals with the use of a multiresolution analytical property of the discrete wavelet transform. Then, 22 condition indicators are extracted from the TSA signal, residual signal, and difference signal. Through the case study analysis, a new approach reveals the most relevant condition indicators based on vibrations that can be used for high speed shaft gear spalling fault diagnosis and their tracking abilities for fault degradation progression. It is also shown that the proposed approach enhances the gearbox

fault diagnosis ability in wind turbines. The approach presented in this paper was programmed in Matlab environment using data

acquired on a 2 MW wind turbine.

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Problem statement

Objectives

Methodology

**References:**

[1]. S. Sumathi, H Lilly Beaulah, R. Vanithamani ―A Wavelat Tranform Based Feature Extraction and Classification of Cardiac Disorder ,July 2014.

[2] Rusmir Bajric, Ninoslav Zuber, Georgios Alexandros Skrimpas, Nenad Mijatovic ― Feature Extraction Using Discrete Wavelet Transform for Gear Fault Diagnosis of Wind Turbine Gear Box, 2016

[3] Jaison Bennat, Chilambuchelvan Arul Ganatrakasam, Kannan Arputharaj―A Discrete Wavelet Based Features Based Extraction and Hybrid Classification Technique for Microarray Data Analysis, 2014