

Load Frequency Control with Robust FOPID Controller using PSO

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Abstract

In this paper, design of Fractional Order Proportional – Integral – Derivative (FOPID) controller is designed for Load Frequency Control (LFC) of power system. The performance of FOPID controller is compared with Proportional – Integral – Derivative (PID) and Proportional – Integral (PI) controllers. The comparison is made based on time domain performance indices Integral of Square Error (ISE). Particle Swarm Optimization (PSO) technique is being used to tune the parameters of the controllers. It is shown that FOPID controller has better dynamic performance than other controllers.

Keywords- LFC; FOPID; PSO; deviation in frequency; ISE.

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Effect of Meditation on Heart Rate Dynamics

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Abstract

This paper describes the Heart Rate Variability (HRV), specifically how the variability changes in a subject before and during meditation. The HRV data is analyzed in terms of the power spectral density but for nonlinear analysis, Poincare plots are being used. The standard descriptors of the Poincare plots are correlated with the frequency domain HRV indices. The results clearly show that the total power, LF power and HF Power increases during meditation. The Correlation coefficient between SD1/SD2 and LF/HF is also found to increase during meditation.

Keywords- Meditation; Heart Rate Variability; Power Spectral Density; Poincare Plot.

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Performance Studies of HPFRC Anchorage Zone Stresses of Pre-stressed Concrete Beam

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Abstract:

The assessment of anchorage strength in post-tensioned pre-stressed concrete beams subjected to in-plane concentrated loads is a problem commonly encountered in design. The state of stresses induced in the anchorage zone are extremely complex and three dimensional in nature. High local stresses are developed in the vicinity of anchor plate. A tri-axial compressive stress state is developed in the vicinity of anchorage plate while state of stress changes to vertical compression and biaxial tension a little further away from the anchorage plate. High Performance Fiber Reinforced Concrete (HPFRC), which are found to optimize structural properties like strength, stiffness, durability, energy absorption, multiple cracking and cohesive resistance, has been used in the anchorage zone of post-tensioned pre-stressed concrete beam, in an attempt to replace secondary reinforcement. Straight steel fibers in various percentages and aspect ratios have been used to replace secondary reinforcement from this region. Three dimensional non-linear finite element models has been developed using ANSYS 15.0 software. By using SOLID 65 solid elements, compressive crushing of concrete is facilitated using plasticity algorithm while concrete cracking in tension is accommodated by the non-linear material model. The capability of the model to capture critical crack regions, loads and deflections for various step loadings in concrete beam has been investigated. The reported results illustrate that maximum bursting stresses occurs along the central line of end block and as aspect ratio changes, location of these stresses moved away from loaded face. The study illustrated significance of

transverse tensile stresses responsible for cracking and failure of material used in pre-stressed concrete beam, rather than principal compressive stresses thereby necessitating concrete of higher grade which has been achieved by incorporating HPFRC in the region.

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A Novel Fuzzy MPPT Controller for Extracting Maximum Energy from Solar Panel

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Abstract

This paper presents a new single input based Fuzzy Controller for extracting maximum power from PV module. The prime contributions of this work are simplification of Fuzzy Based MPPT technique and simulation of fuzzy based MPPT system to track maximum power efficiently. The main highlighted points of this paper are to demonstrate the precise control of the duty cycle with respect to various atmospheric conditions, effect of load mismatching, illustration of PV characteristic curves and operation analysis of the converter in SIMULINK environment. The proposed system has been applied for PV modules AT-37 (36W). Finally, the fuzzy based MPPT results are compared with other MPPT techniques to ensure the validity of the system.

Keywords: PV Modeling, MPPT, Boost Converter, Fuzzy Logic.

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Analysis and Review of Possible e-pill with Wireless Communication, Finding Applications in Biomedical

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Abstract

Getting exact diagnosis, recording or analysis of vital parameters of the stomach, intestine and other internal parts of the human being is the biggest challenge for the advanced medical science and technology. This work will address the challenges to facilitate the development of a high capacity radio system for a small, miniaturized electronic pill device that can be swallowable or implantable in human body in order to detect biological signals or capture images that could eventually be used for diagnostic and therapeutic purposes. Electronic pills, smart capsules or miniaturized micro-systems swallowed by human beings or animals for various biomedical and diagnostic applications are growing rapidly in the last years. The designed telemetry unit is a synchronous bidirectional communication block using continuous phase DQPSK of 115 kHz low carrier frequency for inductive data transmission suited for human body energy transfer. The communication system can assist the electronic pill to trigger an actuator for drug delivery, to record temperature, or to measure pH of the body. It consists additionally to a 32bit processor, memory, external peripheries, and detection facility. The complete system is designed to fit small-size mass medical application with low power consumption, size of 7x25mm. The system is designed, simulated and emulated on FPGA.

Keywords: miniaturized; implantable; drug; simulated; emulated.

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Impact of perceived organizational Justice on Knowledge Sharing Behaviour of Employees - A Study of Select Banks in Shimla District

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Abstract

Knowledge sharing is important in any organization. It is a process through which an individual exchanges his ideas so that new ideas or knowledge can be developed. Knowledge sharing helps attaining sustainable competitive advantage. The organizations take various measures to improve knowledge sharing. Prevailing organizational justice effect the knowledge sharing a lot. The present paper examines the impact of organizational justice on employees' knowledge sharing behavior in select banks in Dist. Shimla. The paper concludes that most significant relationship exist between distributive justice and knowledge sharing behavior of employees of banks under study. Significant relationship also exists between interactional justice and knowledge sharing. Hence, distributive justice and interactional justice should be given due importance in the select organizations.

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Condition Assessment of RCC Bridges

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Abstract

In this paper, the condition survey of existing bridges of NH-72B of Paonta Sahib, Badripur to Shillai section has been conducted to evaluate the condition of existing bridges. The Bridge Engineering does not only cover the construction of new bridge but it also includes main tasks as maintenance of constructed bridge. The bridge engineering not promotes the idea that once the bridge constructed, does not need much care for maintenance. During the life span of bridge, the structure of bridge undergoes deterioration due various pathological factor such as effect of surrounding as weathering effect, Continuous change in capacity due to additional vehicular load with time, poor maintenance practice, deterioration to drainage system, pavement quality etc. In this paper a statistical analysis of common defects in bridge structure is carried out. The analysis was considered for defects of structure condition of each bridge. out of 10 numbers bridges, 9 reinforced concrete bridges of considered stretch were analyzed.

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Comparative study of M35 and M40 grades of concrete by USBR and BIS Methods of Mix Design

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Abstract

This paper presents an experimental study conducted to compare the BIS and USBR method of concrete mix design. The M35 and M40 grades of concrete have been designed for comparison using crushed aggregates and rounded aggregates separately. The study indicates that the concrete designed as per BIS method using crushed aggregates gives target strength in compression, flexure and split tensile. However, when crushed aggregates are replaced with rounded aggregates there is loss in strength of concrete designed by BIS method, which can be overcome by designing as per USBR method. The outcomes of concrete designed as per USBR method either by using crushed aggregates or by rounded aggregates are relatively a lot more eminent than that of BIS method. But the split tensile strength of concrete designed with USBR method using crushed aggregates is overwhelmed by BIS method.

Keywords: - *crushed aggregates, rounded aggregates, compressive strength, flexural strength, split tensile strength.*

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