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SL No	Paper ID	Authors	Paper Title
1	26	Prashant Kumar, Sabha Raj Arya, Rahul Bosu	Impementation of Self-Learning ANN-ANFIS based Dynamic Voltage Restorer for Voltage Power Quality Improvement
2	44	Liya M L, Aswathy M	Impact of basic communication modules and techniques in humanitarian crisis-a brief survey
3	47	Chaity Sarkar, Srijan Banerjee, Gyan Prakash, Kingsuk Majumdar, Ranjan kumar Jha	Modelling and control of a flexible link rotary servo
4	70	Debraj Roy, Trilok Nath Pandey, Bibhuti Bhusan Dash, Sudhansu Shekhar Patra, Utpal Chandra De, Abinash Tripathy	Intelligent Analysis and Identification of Palm Gestures using ML Algorithms
5	95	Chandan Jana, Debolina Pradhan, Sannistha Banerjee, Mousumi Jana Bala	Optimal Placement of Distributed Generation for Minimization of Power Loss, Carbon Emission and Voltage Deviation Considering Demand Uncertainty
6	97	Manikandan C, Ankit Kashyap, Fakira Mohan Nahak	AI's Influence on Cinematic Restoration
7	110	Ayse Ozates, Erhan Akin, Aykut Bilgic, Emre Akca, Canan Tastimur	Analysis of Barrel Electroplating Line with Process Mining and Petri-Net Model
8	114	Esha Baidya Kayal, Kabir Chhabra, Devasenathipathy Kandasamy, Raju Sharma, Sameer Bakhshi, Amit Mehndiratta	Automated Texture Feature Based Bone Tumor Segmentation and Image Analysis using Supervised Machine Learning
9	116	Ankur Chowdhury, Alok K. Saxena, K.D. Joshi	Transient analysis of MGMC Spark gap switches for improved performance in pulse power systems
10	117	Aman Sah, Jyoti Ranjan Panda, Abhik Gorai, Wriddhi Bhowmik, Anirban Neogi	Highly Selective Triple Band Filter Using Stub Loaded Folded Step Impedance Resonator

Modelling and Control of a Flexible Link Rotary Servo

Publisher: IEEE

Chaity Sarkar ; Kingsuk Majumdar ; Srijan Banerjee ; Ranjan kumar Jha ; Gyan Prakash **All Authors**

Abstract: This work presents a study on the modelling and control of a flexible link rotary servo. The lab-scale apparatus, consisting of a flexible link attached to the Rotary Ser... **View more**

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This work presents a study on the modelling and control of a flexible link rotary servo. The lab-scale apparatus, consisting of a flexible link attached to the Rotary Servo Work Station, is analyzed using mathematical models derived from fundamental laws of physics. A state variable model is developed and utilized for the design of a Linear State Variable Feedback (LSVF) controller. The designed controller is physically applied to the system. To further enhance the control performance,a parametric uncertainty is included in the system and a robust LSVF controller is designed. Finally a neural network-based PID controller is designed for the same system. The closed-loop responses are compared with that of the traditional PID controller (designed via MATLAB PID toolbox), demonstrating the effectiveness of the neural network control strategy in achieving improved system performance.

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