

Forward path controller design for a paper roller based paper counting machine

Save Related Papers Chat with paper

Publisher: IEEE Cite This PDF

Anjlit Ganguly ; Arnab Ghosh ; Buddhadeb Pradhan ; Sawan Sen ; Subhojit Paul ; All Authors

4 Full Text Views



Abstract

Document Sections

- I. Introduction
- II. Technical preliminaries
- III. Main Results
- IV. Case study
- » Conclusion

Authors

Figures

References

Keywords

Metrics

Footnotes

Abstract:

The overall behavior and efficiency of a control system are significantly affected by the design and tuning of the controller. This work aims to develop a forward path controller-based paper counting machine where the DC motor governs the speed of the paper rollers. The first order model of the DC motor has been approximated which has been controlled by a forward path controller. A Proportional-Integral-Derivative (PID) controller has been used for forward path controlling operation. The gain of the PID controller has been designed using Genetic Algorithm (GA) and Particle Swarm Optimization (PSO) technique to determine it's optimum value. It has been also designed following a Neural-Network (N-N) architecture. The optimal performance of the controller has been noted for all the three designs and a comparative analysis has been done among the transient specifications of the paper roller speed response for all the three designs. A thorough MATLAB simulation has been conducted to determine the efficacy and utility of the suggested technology involving the above-mentioned controller designs in the context of paper roller based paper counting machine.

Published in: 2025 2nd Global AI Summit - International Conference on Artificial Intelligence and Emerging Technology (AI Summit)

Date of Conference: 19-21 November 2025

Date Added to IEEE Xplore: 04 March 2026

» ISBN Information:

DOI: 10.1109/AISummit66170.2025.11410760

Publisher: IEEE

Conference Location: Noida, India

More Like This

Optimal tuning of PI controller for speed control of DC motor drive using particle swarm optimization
2012 International Conference on Advances in Power Conversion and Energy Technologies (APCET)
Published: 2012

Adaptive Tuning of a PID Speed Controller for DC Motor Drives Using Multi-objective Particle Swarm Optimization
2009 11th International Conference on Computer Modelling and Simulation
Published: 2009

Show More

Feedback