# Patent Search

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Inventor

| Name | Address | Country | Nationality |
|---|---|---|---|
| C.Rajeswari | Assistant Professor, EEE, Excel Engineering College, Namakkal,637303, Tamilnadu, India. | India | India |
| Chhavi Bajpai | Research Scholar, Department of Computer Science & Engineering, Centre for Advanced Studies, Dr A P J Abdul Kalam Technical University, Lucknow – 226021, Uttar Pradesh, India. | India | India |
| Sadargari Viharika | Assistant Professor, Department of CSE(AI&ML), Institute of Aeronautical Engineering College, Dundigal,500043, Hyderabad, Medchal Malkajigiri, Telangana, India. | India | India |
| Dr.S.Sivarajeswari | Associate Professor, Department of EEE, Sri Sairam Institute of Technology, Chennai-600044, Kanchipuram, Tamilnadu, India. | India | India |
| Dr. Rashmi Sharma | Assistant Professor, School of Natural Sciences, GNA University, Phagwara, 144401, Punjab, India. | India | India |
| Shilpa | Assistant Professor, School of Natural Sciences, GNA University, Phagwara, 144401, Punjab, India. | India | India |
| P Sabeenadevi | Assistant Professor, SNS College of Technology, Coimbatore, Tamilnadu, India. | India | India |
| Dr. Amit Chauhan | Department of Life Sciences, School of Sciences, CHRIST (Deemed to be University), Bengaluru, Karnataka, India. | India | India |
| R Vijayalakshmi | Assistant Professor, Computer Science and Applications, St. Peter's Institute of Higher Education and Research, Avadi, Chennai 54, Thiruvalluvar, Tamilnadu, India. | India | India |
| Dr Arun K K | Assistant Professor -III, Department of Mechanical Engineering, Kumaraguru College of Technology, Coimbatore, Tamilnadu, India. | India | India |
| Mohamed Ismail A M | Assistant Professor, ECE, Al-Ameen Engineering College, Karundevanpalayam, Nanjai Uthukuli, Erode-638104, Tamilnadu, India. | India | India |
| P Mani | Assistant Professor, Electronics and Communication Engineering, K.Ramakrishnan College of Technology, Thuraiyur, Trichy, 621 112, Tamilnadu, India. | India | India |

Applicant

| Name | Address | Country | Nationality |
|---|---|---|---|
| C.Rajeswari | Assistant Professor, EEE, Excel Engineering College, Namakkal,637303, Tamilnadu, India. | India | India |
| Chhavi Bajpai | Research Scholar, Department of Computer Science & Engineering, Centre for Advanced Studies, Dr A P J Abdul Kalam Technical University, Lucknow – 226021, Uttar Pradesh, India. | India | India |
| Sadargari Viharika | Assistant Professor, Department of CSE(AI&ML), Institute of Aeronautical Engineering College, Dundigal,500043, Hyderabad, Medchal Malkajigiri, Telangana, India. | India | India |
| Dr.S.Sivarajeswari | Associate Professor, Department of EEE, Sri Sairam Institute of Technology, Chennai-600044, Kanchipuram, Tamilnadu, India. | India | India |
| Dr. Rashmi Sharma | Assistant Professor, School of Natural Sciences, GNA University, Phagwara, 144401, Punjab, India. | India | India |
| Shilpa | Assistant Professor, School of Natural Sciences, GNA University, Phagwara, 144401, Punjab, India. | India | India |
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| Dr Arun K K | Assistant Professor -III, Department of Mechanical Engineering, Kumaraguru College of Technology, Coimbatore, Tamilnadu, India. | India | India |
| Mohamed Ismail A M | Assistant Professor, ECE, Al-Ameen Engineering College, Karundevanpalayam, Nanjai Uthukuli, Erode-638104, Tamilnadu, India. | India | India |
| P Mani | Assistant Professor, Electronics and Communication Engineering, K.Ramakrishnan College of Technology, Thuraiyur, Trichy, 621 112, Tamilnadu, India. | India | India |

**Abstract:**

A NOVEL APPROACH TO ELECTRO-OPTICAL TRACKING: IMPROVED PARTICLE SWARM OPTIMIZATION FRACTIONAL-SYSTEM IDENTIFICATION ALGORITHM The method for the development with system identification can be taken into consideration to increase the system's accuracy and, therefore, its control impact when an electro-optical tracking system (ETS) requires a greater level of control precision. The ETS fractional system model can increase the accuracy of the system model and more accurately capture the features of the system. Thus, based on an enhanced particle swarm optimization technique, this research offers a fractional system identification approach for ETS. The variable-period sampling, operational matrix global coefficient decomposition, and matrix local coefficient decomposition methods are used to reconstruct the variable-period integration operational matrix to separate the noise from the data, thereby reducing the influence of measurement noise, for the impulse noise, global Gaussian noise, and local Gaussian noise present in the identification data. This paper establishes a new quadrotor unmanned aerial vehicle (UAV) model with mismatched disturbances, based on quaternion, and designs a fault tolerant controller, taking into consideration mismatched disturbances, aerodynamic interference, chattering, and actuator failure in the attitude control of the UAV. FIG.1

Complete Specification

Description:A NOVEL APPROACH TO ELECTRO-OPTICAL TRACKING: IMPROVED PARTICLE SWARM OPTIMIZATION FRACTIONAL-SYSTEM IDENTIFICATION ALGORITHM
Technical Field
[0001] The embodiments herein generally relate to a method for a novel approach to electro-optical tracking: improved particle swarm optimization fractional-system identification algorithm.
Description of the Related Art
[0002] One of the essential pieces of machinery for completing the acquisition, tracking, and pointing tasks is the electro-optical tracking system (ETS). It is a mechanically constructed, photo electrically sensor-based, high-precision tracking and positioning device that is utilized in space optical communication, aerospace, telescope systems, beam stability control, and quantum communication, among other domains, for target recognition, navigation, and positioning. There is almost three centuries of history in fractional-order calculus. Fractional-order calculus may be used to create fractional-order models, which more correctly describe a system's dynamic properties than integer-order models since it contains memory and historical features.
[0003] Research domains include wireless communication, signal processing, energy reserve, human behavior modeling, ecological environment prediction, and sophisticated control have all made extensive use of fractional-order models. Researchers in a variety of fields use the fractional-order sliding mode surface because, in comparison to the integer-order sliding mode surface, its calculus operator contains memory and genetic characteristics that can lessen the overshoot phenomenon. For the high precision speed control of a permanent magnet synchronous motor, Alebi et al. developed a unique fractional sliding mode controller that speeds up the tracking of required commands. Jia et al. suggested a novel control approach based on fractional-order theory and sliding mode control for variable speed wind turbines, which

View Application Status

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