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Research Areas

Control and System Engineering, Robotics and Mechatronics Systems

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Design, modelling and control of a textile-based wearable actuating system with sensor feedback for therapeutic applications**
ÇELEBİ M. F., Tunçay Atalay A., Atalay Ö., GAZI V.
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- II. **Swarm Trajectories Generation for Target Capturing With Uncertain Information**
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- III. **Target Capturing in an Ellipsoidal Region with a Swarm of Quadcopter Agents with Different Social Value Orientation Parameters**
Merzi A., GAZI V., Fedele G., D'Alfonso L.
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- IV. **Online and Real-Time Trajectory Generation Method for Unforeseen Events Using a Modified Spline Approach**
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- V. **Distributed sensor deployment using potential fields**
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- VI. **Implementation Studies of Robot Swarm Navigation Using Potential Functions and Panel Methods**
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- VII. **Experimental studies on chemical concentration map building by a multi-robot system using bio-inspired algorithms**
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- VIII. **Single-View Distance-Estimation-Based Formation Control of Robotic Swarms**
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- X. **A Target Tracking Approach for Nonholonomic Agents Based on Artificial Potentials and Sliding Mode Control**
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- XI. **Swarm Stability and Optimization**
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- XII. **Experimental study on the effects of communication on cooperative search in complex environments**
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- XIII. **Asynchronous particle swarm optimization-based search with a multi-robot system: simulation and implementation on a real robotic system**
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- XIV. **Laser based cooperative multi-robot map building for indoor environments**
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- XVI. **Adaptive formation control and target tracking in a class of multi-agent systems**
Duran S., Gazi V.
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- XVII. **Comparison of three orientation agreement strategies in self-propelled particle systems with turn angle restrictions in synchronous and asynchronous settings**
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- XVIII. **Stability of an asynchronous swarm with time-dependent communication links**
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- XIX. **Swarm tracking using artificial potentials and sliding mode control**
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- XX. **Aggregation, foraging, and formation control of swarms with non-holonomic agents using potential functions and sliding mode techniques**
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- XXII. **Output regulation of a class of linear systems with switched exosystems**
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- XXIII. **Decentralized output regulation of a class of nonlinear systems**
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- XXIV. **Asynchronous cyclic pursuit**
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- XXVI. **Stability of a one-dimensional discrete-time asynchronous swarm**
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- XXVII. **Formation control of a multi-agent system using non-linear servomechanism**
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- XXVIII. **A class of attractions/repulsion functions for stable swarm aggregations**
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- XXIX. **Stability analysis of social foraging swarms**
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- XXXI. **Complex control system design and implementation - Using the NIST-RCS software library**
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Articles Published in Other Journals

- I. **A Plug & Play Command Generator for Swarm Formation on Multiple Arbitrary Shaped Orbits: a Diffeomorphism-based approach**
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Refereed Congress / Symposium Publications in Proceedings

- I. **Textile-Based Thermally Driven Actuators for Soft Robotic Mechanotherapy Applications***
ÇELEBİ M. F., Beler Z., Dede E., KOÇAK E. D., Atalay Ö., TUNÇAY ATALAY A., GAZI V.
8th International Conference on Control, Decision and Information Technologies (CoDIT), İstanbul, Turkey, 17 - 20 May 2022, pp.1303-1308
- II. **Target Capturing in an Ellipsoidal Region with a Swarm of Quadrotor UAVs**
Merzi M. A., GAZI V., Fedele G., D'Alfonso L., Bono A.

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- III. **A Swarm Model for Target Capturing in a Polygonal Strip**
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- IV. **Modelling and Coordination of a Swarm of Quadrotors Using Lagrange Dynamics and Potential Functions**
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- V. **Decentralized Formation Control of a Swarm of Quadrotor Helicopters**
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- VI. **Chemical concentration map building using whale optimization algorithm**
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- VII. **Particle swarm optimization based distributed agreement in multi-agent dynamic systems**
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2014 IEEE Symposium on Swarm Intelligence, SIS 2014, Florida, United States Of America, 9 - 12 December 2014, pp.174-180
- VIII. **Sensor coverage maximization with potential fields**
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- IX. **Satellite formation flying: Robust algorithms for propulsion, path planning and control**
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2009 10th European Control Conference, ECC 2009, Budapest, Hungary, 23 - 26 August 2009, pp.2456-2463
- X. **Distributed Output Agreement in a Class of Uncertain Linear Heterogeneous Multi-Agent Dynamic Systems**
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- XI. **Indirect adaptive formation control with nonlinear dynamics and parametric uncertainty**
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- XIII. **Stable Adaptive Particle Swarm Optimization**
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- XIV. **Adaptive Formation Control and Target Tracking in a Class of Multi-Agent Systems: Formation Maneuvers**
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- XV. **Virtual Cancellation Plume for Multiple Odor Source Localization**
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- XVIII. **Cooperative chemical concentration map building using decentralized asynchronous particle swarm optimization based search by mobile robots**
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- XXIII. **Design of circling around a target controllers for mobile robots by feedback linearization**
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- XXIV. **Experimental study on the effects of communication range on cooperative robotic search in complex environments**
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- XXVI. **Decentralized asynchronous particle swarm optimization**
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- XXVII. **A synergetic approach for developing practical multi-robot applications**

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- XXVIII. **Single view depth estimation based formation control of robotic swarms: Obstacle avoidance, simulation, and practical issues**
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- XLI. Swarm tracking using artificial potentials and sliding mode control**
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- XLIV. Swarm Aggregations Using Artificial Potentials and Sliding Mode Control**
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- XLV. Formation Control of a Multi-Agent System Using Decentralized Nonlinear Servomechanism**
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- XLVI. A class of attraction/repulsion functions for stable swarm aggregations**
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- XLVIII. Stability analysis of swarms**
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- XLIX. Stability analysis of swarms in an environment with an Attractant/Repellent profile**
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- L. Decentralized regulation of a class of nonlinear systems**
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- LI. Stability of a one-dimensional discrete-time asynchronous swarm**
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- LII. Adaptive control of discrete time nonlinear systems using dynamic structure approximators**
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- LIII. Direct adaptive control using dynamic structure fuzzy systems**
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