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1 Event-Based PID Control of a Flexible Manufacturing Process

Duca, O; Minca, E; (...); Bidica, C

Dec 2022 | INVENTIONS 7 (4)

Enriched Cited References

In most cases, the system control is made in a sampled manner, measuring the controlled value at a predefined frequency given by the sampling time. However, not all processes provide relevant information at regular intervals, especially in manufacturing. To reduce the costs and complexity of systems, event-based measuring is necessary. To control this kind of process, an eve ... Show more

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2 Digital Twin for a Multifunctional Technology of Flexible Assembly on a Mechatronics Line with Integrated Robotic Systems and Mobile Visual Sensor-Challenges towards Industry 5.0

Minca, E; Filipescu, A; (...); Simion, G

10 Citations

Nov 2022 | SENSORS 22 (21)

Enriched Cited References

A digital twin for a multifunctional technology for flexible manufacturing on an assembly, disassembly, and repair mechatronics line (A/D/RML), assisted by a complex autonomous system (CAS), is presented in the paper. The hardware architecture consists of the A/D/RML and a six-workstation (WS) mechatronics line (ML) connected to a flexible cell (FC) and equipped w ... Show more

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3 Mobile Visual Servoing Based Control of a Complex Autonomous System Assisting a Manufacturing Technology on a Mechatronics Line

EN

Simion, G; Filipescu, A; (...); Filipescu, A

Sep 2022 | INVENTIONS 7 (3)

Enriched Cited References

The main contribution of this paper is the modeling and control for a complex autonomous system (CAS). It is equipped with a visual sensor to operate precision positioning in a technology executed on a laboratory mechatronics line. The technology allows the retrieval of workpieces which do not completely pass the quality test. Another objective of this paper is the implemer ... Show more

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31 References

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4 Communication and Control of an Assembly, Disassembly and Repair Flexible Manufacturing Technology on a Mechatronics Line Assisted by an Autonomous Robotic System

EN

Ionescu, D; Filipescu, A; (...); Filipescu, A

Jun 2022 | INVENTIONS 7 (2)

Enriched Cited References

This paper aims to describe modeling and control in what concerns advanced manufacturing technology running on a flexible assembly, disassembly and repair on a mechatronic line (A/D/RML) assisted by an Autonomous Robotic System (ARS), two robotic manipulators (RM) and visual servoing system (VSS). The A/D/RML consists of a six workstations (WS) mecha ... Show more

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5 Citations

33 References

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5 Event-based PID control in a flexible manufacturing process

Duca, O; Meica, E; (...); Paun, M

26th International Conference on System Theory, Control and Computing (ICSTCC)

2022 | 2022 26TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.182-187

1 Citation 10

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In the flexible manufacturing environment some processes that until now did not need a close loop control need to be controlled so that the precision of the task permits the continuing of the manufacturing. As the processes are optimized and the manufacturing consists of multiple parallel processes, there is a need of assuring that a product is at a certain location at a (... Show more

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10 References

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6 Complex Autonomous System Assisting a Manufacturing Technology on a Mechatronics Line. A Digital Twin Approach

Filipescu, A; Solea, R; (...); Filipescu, A
26th International Conference on System Theory, Control and Computing (ICSTCC)
2022 | 2022 26TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.157-162

The main contribution of this paper is to present the implementation of an assisting technology digital twin based for a processing/reprocessing mechatronics line (P/RML). The implemented technology allows the reprocessing of the workpieces which do not pass the quality test. The digital twin approach considers the P/RML equipped with a complex autonom(... Show more

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7 Digital Twin for a Mechatronics Line with Integrated Mobile Robotic Systems

Filipescu, A; Cernega, DC; (...); Filipescu, A
26th International Conference on System Theory, Control and Computing (ICSTCC)
2022 | 2022 26TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.163-169

The paper presents digital twin multi-functional technology for flexible production on an assembly, disassembly and repair (A/D/RML) mechatronics line assisted by a complex autonomous system (CAS). The real world consists of A/D/RML a mechatronic line (ML) with six workstations (WS) connected to a flexible cell (FC) equipped with an industrial robotic manipulator (IRM). Th ... Show more

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8 Multifunctional Technology of Flexible Manufacturing on a Mechatronics Line with IRM and CAS, Ready for Industry 4.0

EN

Filipescu, A; Ionescu, D; (...); Simion, G

May 2021 | PROCESSES 9 (5)

Enriched Cited References

A communication and control architecture of a multifunctional technology for flexible manufacturing on an assembly, disassembly, and repair mechatronics line (A/D/RML), assisted by a complex autonomous system (CAS), is presented in the paper. A/D/RML consists

6 Citations

31 References

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of a six-work station (WS) mechatronics line (ML) connected to a flexible cell (FC) equipped with a six-degree ... Show more

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9 CAS and IRM Integrated into a Multifunctional Flexible Manufacturing Technology on an A/D/RML

Ionescu, D; Cernega, D; (...); Filipescu, A

25th International Conference on System Theory, Control and Computing (ICSTCC)

2021 | 2021 25TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.541-546

14 References

Enriched Cited References

The aim of this paper is to model, control and implement an assisting technology for a flexible assembly, disassembly and repair on a mechatronic line (A/D/RML), using autonomous robotic system (ARS), two robotic manipulators (RMs) and visual servoing system (VSS).The A/D/RML consists of 6-work stations (WS) mechatronics line (ML) connected to a flexible cell (FC) e ... Show more

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10 Manufacturing Technology on a Mechatronics Line Assisted by Autonomous Robotic Systems, Robotic Manipulators and Visual Servoing Systems

EN

Filipescu, A; Minca, E; (...); Coanda, HG

Dec 2020 | ACTUATORS 9 (4)

12 Citations

28 References

Enriched Cited References

This paper proposes the implementation of an assisting technology to a processing/reprocessing mechatronics line (P/RML), comprising the following: two autonomous robotic systems (ARSs), two robotic manipulators (RMs) and three visual servoing systems (VSSs). The P/RML has four line-shaped workstations assisted by two ARSs-wheeled mobile robots (WMRs): c ... Show more

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11 Optimal Control of Automated Resupply on a Flexible Manufacturing Mechatronics Line

Duca, O; Minca, E; (...); Paun, M

EN

24th International Conference on System Theory, Control and Computing (ICSTCC)

2020 | 2020 24TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.921-926

This paper proposes a new control algorithm for real-time replenishment the warehouses of a flexible manufacturing process, in order to optimize the stocks. The supply / resupply strategy is based on the proposed optimization function that integrates two components: a predictive component of the necessary stocks corresponding to the forecasted time interval, and the optir ... Show more

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1 Citation

15 References

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12 Improved Image Processing Algorithm for Quality Test on a Flexible Manufacturing Mechatronic Line

Paun, M; Minca, E; (...); Duca, O

EN

24th International Conference on System Theory, Control and Computing (ICSTCC)

2020 | 2020 24TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.819-824

This article proposes a new approach for image processing algorithms based on image processing techniques: image filtering using the Gaussian smoothing filter, edge detection, normal cross correlation (NCC) and M-estimator Sample Consensus (MASC). The new algorithm increases the accuracy of the detection function, but also the duration of the quality analysis oper ... Show more

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13 Modelling and Control of Mechatronics Lines Served by Complex Autonomous Systems

Dragomir, F; Minca, E; (...); Filipescu, A

EN

Aug 1 2019 | SENSORS 19 (15)

The aim of this paper is to reverse an assembly line, to be able to perform disassembly, using two complex autonomous systems (CASs). The disassembly is functioning only in case of quality default identified in the final product. The CASs are wheeled mobile robots (WMRs) equipped with robotic manipulators (RMs), working in parallel or collaboratively. The reversil ... Show more

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11 Citations

25 References

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14 Optimal control of the complete assembly/disassembly cycle for a mechatronics line prototype

Duca, O; Gurgu, V; (...); Dragomir, O

23rd International Conference on System Theory, Control and Computing (ICSTCC)

10

3 Citations

EN

2019 | 2019 23RD INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.620-625

The aim of this paper is to define a control strategy for complete manufacturing cycle of an assembly/disassembly educational mechatronics line (EML), assisted by a complex autonomous system (CAS), a wheeled mobile robot (WMR) equipped with robotic manipulator (RM). By reversibility we mean that the line is able to perform automatic disassembly of the prc ... Show more

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☐ 15 Mechatronics Manufacturing Line with Integrated. Autonomous Robots and Visual Servoing Systems

EN

Filipescu, A; Minca, E and Filipescu, A
9th IEEE International Conference on Cybernetics and Intelligent Systems (CIS) / IEEE Conference on Robotics, Automation and Mechatronics (RAM)
2019
|
PROCEEDINGS OF THE IEEE 2019 9TH INTERNATIONAL CONFERENCE ON CYBERNETICS AND INTELLIGENT SYSTEMS (CIS) ROBOTICS, AUTOMATION AND MECHATRONICS (RAM) (CIS & RAM 2019)
, pp.422-427

This paper deals a manufacturing technology on a processing/reprocessing mechatronics line (P/RML), based on autonomous robots and visual servoing systems (VSSs). The P/RML has four workstations, line shaped, being serviced by two wheeled mobile robots (WMRs), robotic manipulators (RMs) and two types of VSSs for caching, transporting and releasing work piec ... Show more

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☐ 16 Trajectory-Tracking Sliding-Mode Control of the Autonomous Wheelchair Modeled as a Nonholonomic WMR

EN

Filipescu, A; Solea, R; (...); Ciubucciu, G
14th IEEE International Conference on Control and Automation (ICCA)
2018 | 2018 IEEE 14TH INTERNATIONAL CONFERENCE ON CONTROL AND AUTOMATION (ICCA) , pp.1168-1173

Enriched Cited References

This paper deals a new approach of the trajectory-tracking second-order sliding-mode control (TT-SOSMC), applied to control a nonholonomic wheelchair for elderly and disabled based on kinematic model. Cirrus Power Wheelchair (CPW) was modelled like a wheeled mobile robot (WMR) with two driving and two free wheels (2DW/2FW). A hardware description, con ... Show more

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☐ 17 Extended Approach for Modelling and simulation of Mechatronics Lines Served by Collaborative Mobile Robots

EN

Minca, E; Filipescu, A; (...); Filipescu, A
22nd International Conference on System Theory, Control and Computing (ICSTCC)

5
Citations 10

20

2018 | 2018 22ND INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.335-341

This article proposes an extended approach to assembly/disassembly mechatronics lines (A/DML) modelling, in terms of service system typologies: autonomous mobile robots, collaborative mobile robots versus mobile robots with parallel action. The A/DML systems served by mobile robots have a specific typology and are modelled by specialized hybrid instruments belon ... Show more

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18 Visual servoing systems based control of complex autonomous systems serving a P/RML

EN

Petrea, G; Filipescu, A; (...); Filipescu, A

22nd International Conference on System Theory, Control and Computing (ICSTCC)

2018 | 2018 22ND INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.323-328

The appearance of random event in autonomous processing systems is the main concern in this paper. The main scope is to embed different visual servoing systems (VSSs) with a processing/reprocessing mechatronics line (P/RML) in order to control different complex autonomous systems (CASs) while servicing the line in the operation of recovery of the pieces that did not p ... Show more

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19 Hybrid Modelling and Simulation of a P/RML with Integrated Complex Autonomous Systems

EN

Petrea, G; Filipescu, A; (...); Filipescu, A

22nd International Conference on System Theory, Control and Computing (ICSTCC)

2018 | 2018 22ND INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.439-444

The main objective of this research is to obtain a good model for the tasks performed by a flexible manufacturing mechatronics line (FMML) with integrated complex autonomous systems (CASs). The FMML has four collaborative workstations, line shaped, and being serviced by two CASs, wheeled mobile robots (WMRs) with robotic manipulators (RMs), for caching, transpo ... Show more

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20 Trajectory Tracking Nonlinear Control and Narrow Spaces Navigation of a WMR

EN

Solea, R; Ciubucciu, G; (...); Voncila, I

22nd International Conference on System Theory, Control and Computing (ICSTCC)

2018 | 2018 22ND INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.329-334

In this paper is presented the movement control job of a wheeled mobile robot consisting in two tasks. The first task is to solve the nonlinear control for the trajectory tracking problem in presence of uncertainties. This task is solved using a new enhanced Sliding Mode Control law with a saturation component to reduce the chattering phenomenon and to force the reacl ... Show more

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21 Visual Servoing and Obstacle Avoidance Method based Control Autonomous Robotic Systems Servicing a Mechatronics Manufacturing Line

EN

Ciubucciu, G; Solea, R; (...); Filipescu, A

9th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems - Technology and Applications (IDAACS)

2017

| PROCEEDINGS OF THE 2017 9TH IEEE INTERNATIONAL CONFERENCE ON INTELLIGENT DATA ACQUISITION AND ADVANCED COMPUTING SYSTEMS: TECHNOLOGY AND APPLICATIONS (IDAACS), VOL 2 , pp.874-879

In this paper is intended to control the entire flexible line using two wheeled mobile robot and two robotic manipulators. The mechatronics manufacturing line has no possibility of automatic feed with pieces and no automatic pickup of the scrap pieces from the storage station. The robotic manipulators are used for charging the buffer of the flexible line as well as empt ... Show more

1 Citation

17 References

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22 SHPN Models Based Simulation and Control of Mobile Robotic Systems Integrated into A/DML

EN

Filipescu, A; Cernega, D; (...); Minca, E

21st International Conference on System Theory, Control and Computing (ICSTCC)

2017 | 2017 21ST INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.230-235

Purpose of this paper is to model, simulate and control wheeled mobile robotic systems integrated into an assembly mechatronics line for making it reversible, i.e. have the capacity to deal disassembly using mobile platforms equipped with a manipulator. For this purpose, synchronised hybrid Petri nets (SHPN) models will be used to simulate and control an assembly/di ... Show more

1 Citation

8 References

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23 SHPN Modelling, Visual Servoing and Control of WMR with RM Integrated into P/RML

Filipescu, A; Solea, R; (...); Petrea, G
EN
21st International Conference on System Theory, Control and Computing (ICSTCC)
2017 | 2017 21ST INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.315-320

In this paper, the main purpose is to design the model of a given mechatronics line, composed by several workstations and serviced during the recovery, transport and return of a work piece by a Wheeled Mobile Robot (WMR) which has mounted a Robotic Manipulator (RM). The work piece to be transported has been initially tested and did not pass the quality test. In this con ... Show more

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24 Control and Obstacle Avoidance of a WMR, Based on Sliding-Mode, Ultrasounds and Laser

Ciubucciu, G; Filipescu, A; (...); Dumitrascu, B
EN
12th IEEE International Conference on Control and Automation (ICCA)
2016 | 2016 12TH IEEE INTERNATIONAL CONFERENCE ON CONTROL AND AUTOMATION (ICCA) , pp.779-784

In this paper is presented an algorithm for trajectory-tracking and obstacle avoidance for wheeled mobile robots (WMR). The proposed algorithm creates a trajectory composed of a global trajectory generated off-line and local obstacle avoidance trajectories that are created when an obstacle is detected by the sonar and laser sensors. Only one discrete-time sliding-mode c ... Show more

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25 Hybrid Modeling, Balancing and Control of a Mechatronics Line Served by Two Mobile Robots

Filipescu, A; Filipescu, A; (...); Voda, A
EN
20th International Conference on System Theory, Control and Computing (ICSTCC)
2016 | 2016 20TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.234-239

This paper presents hybrid model for an assembly/disassembly mechatronics line serviced by two mobile robotics systems, working in parallel. The aim is to reverse an assembly line using these mobile platforms. For this purpose, an assembly/disassembly line balancing (A/DLB) and synchronized hybrid Petri nets (SHPN) will be used to model and control an assembly/disassem ... Show more

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26 Sliding-Mode Control and Sonnar Based Bubble Rebound Obstacle Avoidance for a WMR

Filipescu, A; Dumitrascu, B; (...); Voda, A
19th International Conference on System Theory, Control and Computing (ICSTCC)

EN

2015 | 2015 19TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.105-110

In this paper an algorithm for trajectory-tracking and obstacle avoidance for wheeled mobile robots (WMR) is presented. The algorithm creates a trajectory composed of a global trajectory generated off-line and local obstacle avoidance trajectories that are created when an obstacle is detected by the sonar sensors. Only one discrete-time sliding-mode controller is required to tı ... Show more

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27 Cycle Time Optimization of a Reversible A/DML Served by a Mobile Robotic System

EN

Minca, E; Coanda, HG and Filipescu, A
19th International Conference on System Theory, Control and Computing (ICSTCC)
2015 | 2015 19TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.99-104

This paper presents a new cycle time optimization (CTO) approach for an assembly/disassembly mechatronics line (A/DML) served by a wheeled mobile robot (WMR) equipped with a robotic manipulator (RM). The mobile robot serves A/DML during disassembling for transporting carry the disassembled components from disassembling locations to the corresponding storag ... Show more

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28 Wheelchair Control and Navigation Based on Kinematic Model and Iris Movement

EN

Solea, R; Filipescu, A; (...); Filipescu, S
Proceedings of the 2015 7th IEEE International Conference on Cybernetics and Intelligent Systems (CIS) And Robotics, Automation and Mechatronics (RAM)
2015
|
PROCEEDINGS OF THE 2015 7TH IEEE INTERNATIONAL CONFERENCE ON CYBERNETICS AND INTELLIGENT SYSTEMS (CIS) AND ROBOTICS, AUTOMATION AND MECHATRONICS (RAM)

This paper deals control and navigation of the wheelchair for elderly and disabled based on kinematic model iris motion and image processing. Cirrus Power Wheelchair was modelled as an wheeled mobile robot (WMR) with two driving and two free wheels (2DW/2FW). An input/output model of the wheel control system consisting of servo-amplifier, DC motor and ... Show more

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29 Modelling and control of an assembly/disassembly mechatronics line served by mobile robot with manipulator

EN

Minca, E; Filipescu, A and Voda, A

Oct 2014 | CONTROL ENGINEERING PRACTICE 31 , pp.50-62

26
Citations

24
References

The aim of this paper is to reverse an assembly line using a mobile platform equipped with a manipulator. By reversibility we mean that the line is able to perform disassembly. For this purpose, an assembly/disassembly line balancing (A/DLB) and a synchronised hybrid Petri nets (SHPN) model will be used to model and control an assembly/disassembly mechatronics line (A/D ... Show more

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30 Modeling and Control of a Mechatronics System Served by a Mobile Platform Equipped with Manipulator

EN

Filipescu, A; Petrea, G; (...); Filipescu, S
33rd Chinese Control Conference (CCC)
2014 | 2014 33RD CHINESE CONTROL CONFERENCE (CCC) , pp.6577-6582

New idea of this paper is to make a processing line capable of reprocessing pieces that have not passed the quality test at the end of the line. The focus is to provide a model of the processing system and to introduce an autonomous robotic system (ARS) type a wheeled mobile robot (WMR) equipped with a robotic manipulator (RM) in order to transport pieces, for repı ... Show more

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31 Speed Estimators Based Control of Permanent Magnet Syncronous Motor

EN

Filipescu, S and Filipescu, A
18th International Conference on System Theory, Control and Computing (ICSTCC)
2014 | 2014 18TH INTERNATIONAL CONFERENCE SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.891-896

Enriched Cited References

This paper deals several widely used, closed-loop discrete-time, speed estimators, used for the digital control of permanent magnet synchronous motors (PMSM). Aim of the paper was to develop a rotor position/speed sensorless control system with performance comparable to the sensor-based control systems for PMSMs over their entire operating range, including low· ... Show more

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32 Multivariable H_∞ Control of Wastewater Biological Treatment Processes

Chirosca, A; Ifrim, G; (...); Caraman, S

EN

Mar 2013 | CONTROL ENGINEERING AND APPLIED INFORMATICS 15 (1) , pp.11-21

This paper has been carried out to develop an efficient multivariable H, robust control system, in the presence of the bounded parametric uncertainties, with good disturbance and measurement noise compensation. This strategy was applied to a biological wastewater treatment process in order to control the organic substrate concentrations associated with an a| ... Show more

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33 Laser-based Obstacle Avoidance Algorithm for Four Driving/Steering Wheels Autonomous Vehicle

Dumitrascu, B; Filipescu, A; (...); Voda, A

EN

17th International Conference System Theory, Control and Computing (ICSTCC)

2013 | 2013 17TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.187-192

In this paper an algorithm for trajectory-tracking with obstacle avoidance for autonomous vehicles is presented. The algorithm tracks a trajectory composed of an intended global trajectory that was previously generated and local obstacle avoidance trajectories that are created when an obstacle is detected by the laser. A discrete-time sliding-mode controller is used by the aut ... Show more

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34 Discrete modelling based control of a processing/reprocessing mechatronics line served by an autonomous robotic system

Filipescu, A; Petrea, G; (...); Minca, E

EN

4th International Symposium on Electrical and Electronics Engineering (ISEEE)

2013 | 2013 4TH INTERNATIONAL SYMPOSIUM ON ELECTRICAL AND ELECTRONICS ENGINEERING (ISEEE)

In this paper it is approached the problem of random events appearing in an automated processing/reprocessing line. The purpose is to give a model of the processing/reprocessing line and to introduce in the process a wheeled mobile robot (WMR)equipped with a robotic manipulator (RM). Reprocessing starts after the processing and after the processed piece fails the qu ... Show more

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35 A Theoretical Approach of the Generalized Hybrid Model Based Control of Repetitive Processes

Minca, E; Filipescu, A and Voda, A

9th Asian Control Conference (ASCC)

1 Citation

EN

2013 | 2013 9TH ASIAN CONTROL CONFERENCE (ASCC)

A generalized Synchronized Hybrid Petri Nets (SHPN) model based control of a hybrid repetitive processes is presented in this paper. The whole process has two components: one discrete and one continuous. Its evolution can be described by a set of repetitive tasks. The generalized SHPN model is associated to this hybrid system with N repetitive tasks. The generalized SHI ... Show more

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☐ 36 Hybrid Model Based Control of a Mechatronics Line Served by Mobile Robot with Manipulator

Minca, E; Voda, A; (...); Filipescu, A

EN

8th IEEE Conference on Industrial Electronics and Applications (ICIEA)

2013 | PROCEEDINGS OF THE 2013 IEEE 8TH CONFERENCE ON INDUSTRIAL ELECTRONICS AND APPLICATIONS (ICIEA) , pp.1296-1301

This paper presents the model and control structure of an assembly/disassembly mechatronics line (A/DML) served by a wheeled mobile robot (WMR) equipped with robotic manipulator (RM). The model is a hybrid type, where A/DML is the discrete part and WMR with RM is the continuous part. Moreover, the model operates as a synchronized with signals from sensors. T ... Show more

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☐ 37 Hybrid modelling based control of an processing/reprocessing mechatronics line served by an autonomous robotic system

EN

Petrea, G; Filipescu, A; (...); Voda, A

17th International Conference System Theory, Control and Computing (ICSTCC)

2013 | 2013 17TH INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.410-415

The new idea in this paper is to make a processing line capable of reprocessing pieces that have not passed the quality test. The focus is to provide a model of the processing line and to introduce in the process a wheeled mobile robot (WMR) equipped with a robotic manipulator (RM) in order to transport pieces, for reprocessing. For this purpose, an processing/reprocessin ... Show more

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☐ 38 New Approach in Control of Assembly/Disassembly Line Served by Robotic Manipulator Mounted on Mobile Platform

EN

Minca, E; Filipescu, A and Voda, A

IEEE International Conference on Robotics and Biomimetics (ROBIO)

2012 | 2012 IEEE INTERNATIONAL CONFERENCE ON ROBOTICS AND BIOMIMETICS (ROBIO 2012)

The new idea of this paper is to make reversible an assembly line, i.e. to allow complete disassembly, by using a mobile platform equipped with robotic manipulator. The approach is a hybrid one in which the assembly/disassembly line is the discrete system whilst the wheeled mobile robot (WMR) together with the robotic manipulator (RM) is considered the continuous o ... Show more

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39 Discrete-Time Sliding-Mode Control of Four Driving-Steering Wheels Autonomous Vehicle

Dumitrascu, B; Filipescu, A; (...); Minca, E
30th Chinese Control Conference
EN
2011 | 2011 30TH CHINESE CONTROL CONFERENCE (CCC) , pp.3620-3625

A discrete-time sliding-mode control for the trajectory tracking problem of four driving-steering wheels (4DW/SW) autonomous vehicle SEEKUR is presented in this paper. SEEKUR is a holonomic, all-wether, outdoor robot platform for outdor security, inspection and research. SEEKUR's unique shape and omni-directional steering allow truly holonomic movement. A discret ... Show more

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40 Obstacle Avoidance and Path Following Control of a WMR used as Personal Robotic Assistant

Filipescu, A; Susnea, I; (...); Filipescu, S
18th Annual International Mediterranean Conference on Control and Automation (MED)
EN
2010 | 18TH MEDITERRANEAN CONFERENCE ON CONTROL AND AUTOMATION , pp.1555-1560

In this paper, an obstacle avoidance method and a fuzzy control, together with a distributed system of embedded microcontrollers, are presented. In the real-time control, a wheeled mobile robot (WMR), Pioneer 3-DX, from Mobile Robots, has been used. The solution adopted can be easily ported for the implementation of an intelligent wheelchair, capable either to carry an ... Show more

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41 Fuzzy Control and Bubble Rebound Obstacle Avoidance of a Mobile Platform Used as Robotic Assistant

Filipescu, A; Susnea, I; (...); Filipescu, S
29th Chinese Control Conference
EN
2010 | PROCEEDINGS OF THE 29TH CHINESE CONTROL CONFERENCE , pp.3654-3659

In this paper a fuzzy control and an obstacle avoidance system, together with a distributed system of embedded microcontrollers, are presented. In the real-time control, a wheeled mobile robot (WMR), PeopleBot from Mobile Robots, has been used. The solution adopted can be easily ported for the implementation of an intelligent wheelchair, capable either to carry an ... Show more

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42 Lateral Motion Control of Four-Wheels Steering Vehicle Using a Sliding-Mode Controller

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In this paper a lateral motion control using a sliding-mode controller (SMC) for four-wheels driving and steering (4WDS) vehicle is presented. The lane centerline following by look-ahead techniques is main control performance. The dynamic model of a linear 2 DOF bicycle mode has been taken into account. The advantage of this controller over current control procedure i ... Show more

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43 Sliding-mode Controller for Four-Wheel-Steering Vehicle: Trajectory-Tracking Problem

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A solution to trajectory-tracking control problem for a four-wheel-steering vehicle (4WS) is proposed using sliding-mode approach. The advantage of this controller over current control procedure is that it is applicable to a large class of vehicles with single or double steering and to a tracking velocity that is not necessarily constant. The sliding-mode approach make the sol ... Show more

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44 FORMATION CONTROL OF MULTI-ROBOTS VIA SLIDING-MODE TECHNIQUE

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Solea, R; Cernega, D; (...); Serbencu, A
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ICINCO 2010: PROCEEDINGS OF THE 7TH INTERNATIONAL CONFERENCE ON INFORMATICS IN CONTROL, AUTOMATION AND ROBOTICS, VOL 2
, pp.161-166

This paper addresses the control of a team of nonholonomic mobile robots. Indeed, the most work, in this domain, have studied extensively classical control for keeping a formation of mobile robots. In this work, the leader mobile robot is controlled to follow an arbitrary reference path, and the follower mobile robot use the sliding-mode controller to keep constant rel ... Show more

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45 Virtual Pheromones for Real-Time Control of Autonomous Mobile Robots

Susnea, I; Vasiliu, G; (...); Radaschin, A

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This paper presents a novel implementation of the concept of "virtual pheromones" for controlling autonomous mobile robots. Instead of deploying chemicals, RFID tags, or other traceable marks in the environment, the virtual pheromones are stored in a map of the environment maintained and updated by a "pheromone server". This map acts like a shared memory for all ... Show more

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46 Wheeled Mobile Robot Control Using Virtual Pheromones and Neural Networks

Filipescu, A; Susnea, I; (...); Stamatescu, G

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This paper presents a novel approach on the implementation of the concept of "virtual pheromones" for use in controlling autonomous mobile robots. Rather than being deployed in the environment, the virtual pheromones are stored in a map of the environment maintained and updated by a "pheromone server". This map acts like a shared memory for all ... Show more

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47 Distributed System of Mobile Platform Obstacle Avoidance and Control as Robotic Assistant for Disabled and Elderly

Filipescu, A; Susnea, I; (...); Stamatescu, G

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In this paper an experiment aimed to demonstrate that a distributed system of embedded microcontrollers is presented. In the experiment described, didactic mobile robot, PeopleBot from Mobile Robots has been used, but the entire solution can be easily ported for the implementation of an intelligent wheelchair, capable either to carry an elderly or disabled pe ... Show more

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This paper describes an experiment aimed to demonstrate that a distributed system of embedded microcontrollers, wherein a number of control modules are located on the mobile robot, while others are deployed in an "intelligent environment" can significantly reduce ... Show more

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