

**LISTA PUBLICAȚIILOR REZULTATE ÎN URMA CERCETĂRII DOCTORALE,
PUBLICATE SAU ACCEPTATE SPRE PUBLICARE, SUB AFILIERE UPT**

Ing. Elena-Lorena Constantin (căs. HEDREA) student doctorand

1. Lucrări științifice publicate în reviste indexate Web of Science-WoS (ISI)

1. C.-A. Bojan-Dragos, M.-B. Radac, R.-E. Precup, **E.-L. Hedrea** and O.-M. Tanasoiu, "Gain-Scheduling control solutions for magnetic levitation systems," *Acta Polytechnica Hungarica*, vol. 15, no. 5, pp. 89-108, 2018 (WOS:000449055300006),
2. **E.-L. Hedrea**, R.-E. Precup and C.-A. Bojan-Dragos, "Results on tensor product-based model transformation of magnetic levitation systems," *Acta Polytechnica Hungarica*, vol. 16, no. 9, pp. 93-111, 2019 (WOS:000492691500006),
3. **E.-L. Hedrea**, R.-E. Precup, E.M. Petriu, C.-A. Bojan-Dragos and C. Hedrea, "Tensor product-based model transformation approach to cart position modeling and control in pendulum-cart systems," *Asian Journal of Control*, vol. 23, no. 3, pp. 1238-1248, 2021 (WOS:000627552900001),
4. **E.-L. Hedrea**, R.-E. Precup, R.-C. Roman and E.M. Petriu, "Tensor product-based model transformation approach to tower crane systems modeling," *Asian Journal of Control*, vol. 23, no. 3, pp. 1313-1323, 2021 (WOS:000629323100001).

2. Lucrări științifice publicate în volumele unor manifestări științifice (Proceedings) indexate Web of Science-WoS (ISI) Proceedings

1. **E.-L. Hedrea**, C.-A. Bojan-Dragos, R.-E. Precup, R.-C. Roman, E.-M. Petriu and C. Hedrea, "Tensor product-based model transformation for position control of magnetic levitation systems," in *Proc. IEEE 26th International Symposium on Industrial Electronics*, Edinburgh, Scotland, 2017, pp. 1141-1146 (WOS:000426794000180),
2. **E.-L. Hedrea**, C.-A. Bojan-Dragos, R.-E. Precup and T.-A. Teban, "Tensor product-based model transformation for level control of vertical three tank systems," in *Proc. IEEE 21st International Conference on Intelligent Engineering Systems*, Larnaca, Cyprus, 2017, pp. 113-118 (WOS:000418333800019),
3. **E.-L. Hedrea**, C.-A. Bojan-Dragos, R.-E. Precup and E.M. Petriu, "Comparative study of control structures for maglev systems," in *Proc. IEEE 18th International Power Electronics and Motion Control Conference, Budapest, Hungary*, 2018, pp. 657-662 (WOS:000462062900100),
4. **E.-L. Hedrea**, R.-E. Precup, C.-A. Bojan-Dragos and C. Hedrea, "Tensor product-based model transformation technique applied to modeling vertical three tank systems," in *Proc. IEEE 12th International Symposium on Applied Computational Intelligence and Informatics*, Timisoara, Romania, 2018, pp. 63-68 (WOS:000448144200010),
5. **E.-L. Hedrea**, R.-E. Precup, C.-A. Bojan-Dragos, R.-C. Roman, O. Tanasoiu and M. Marinescu, "Cascade control solutions for maglev systems," in *Proc. 22nd International Conference on System Theory, Control and Computing*, Sinaia, Romania, 2018, pp. 20-26 (WOS:000465109800004),
6. C.-A. Bojan-Dragos, A.-I. Szedlak-Stinean, R.-E. Precup, L. Gurgui, **E.-L. Hedrea** and I.-C. Mituletu, "Control solutions for vertical three-tank systems," in *Proc. 12th International Symposium on Applied Computational Intelligence and Informatics*, Timisoara, Romania, 2018, pp. 593-598 (WOS:000448144200103),
7. **E.-L. Hedrea**, R.-E. Precup, C.-A. Bojan-Dragos, C. Hedrea, D. Ples and D. Popovici, "Cascade control solutions for level control of vertical three tank systems," in *Proc. 13th International Symposium on Applied Computational Intelligence and Informatics*, Timisoara, Romania, 2019, pp. 353-358 (WOS:000610436600062),
8. **E.-L. Hedrea**, R.-E. Precup, C.-A. Bojan-Dragos, E.M. Petriu and R.-C. Roman, "Tensor Product-based model transformation and sliding mode control of electromagnetic actuated clutch system," in *Proc. 2019 International Conference on Systems, Man and Cybernetics*, Bari, Italy, 2019, pp. 1402-1407 (WOS:000521353901072),
9. **E.-L. Hedrea**, R.-E. Precup, C.-A. Bojan-Dragos and O. Tanasoiu, "Tensor product-based model transformation technique applied to modeling magnetic levitation systems," in *Proc. IEEE 23rd International Conference on Intelligent Engineering Systems*, Gödöllő, Hungary, 2019, pp. 179-184 (WOS:000589668400030)
10. **E.-L. Hedrea**, R.-E. Precup, C.-A. Bojan-Dragos and C. Hedrea, "TP-based fuzzy control solutions for magnetic levitation systems," in *Proc. 23rd International Conference on System Theory Control and Computing*, Sinaia, Romania, 2019, pp. 809-814 (WOS:000590181100136).

Data: 15.06.2022

AVIZAT, Conducător științific <i>Prof.univ.dr.ing. Radu-Emil Precup</i>	ÎNTOCMIT, Student doctorand <i>ing. Elena-Lorena Constantin (căs. Hedrea)</i>
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ANEXE

A) Pentru Lucrări publicate indexate din Web of Science-WoS (ISI) (secțiunile 1-2).

i) Extras listat din Web of Science cu lucrări indexate (ISI).

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1 Tensor product-based model transformation approach to tower crane systems modeling
Hedrea EL; Precup RE (-); Petru EM May 2021 | Mar 2021 (Early Access) | ASIAN JOURNAL OF CONTROL, 23 (3), pp.1313-1323
Enriched Cited References
This paper presents the application of the tensor product (TP)-based model transformation approach to produce Tower CRane (TCR) systems models. The modeling approach starts with a nonlinear model of TCR systems as representative multi-input-multi-output controlled processes. A linear parameter-varying model is next derived, and the modeling steps specific to TP-based model transformation are p ... Show more
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17 Citations 63 References

2 Tensor product-based model transformation approach to cart position modeling and control in pendulum-cart systems
Hedrea EL; Precup RE (-); Hedrea C May 2021 | Mar 2021 (Early Access) | ASIAN JOURNAL OF CONTROL, 23 (3), pp.1238-1248
Enriched Cited References
The paper presents the application of the tensor product (TP)-based model transformation technique to model and control the cart position of single-input multi-output pendulum-cart systems (PCs). The modeling is first carried out. The derived TP model, the nonlinear model of PCs, and the laboratory equipment are tested in the same open-loop scenario, and their corresponding outputs are collect ... Show more
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3 TP-Based Fuzzy Control Solutions for Magnetic Levitation Systems
Hedrea EL; Precup RE (-); Hedrea C 23rd International Conference on System Theory, Control and Computing (ICSTCC) 2019 | 2019 23RD INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.809-814
In this paper two cascade control system (CCS) structures designed in order to control the position of the magnetic sphere of a Magnetic levitation laboratory equipment are presented. The proposed CCS structures consist of a TP-based controller (TP-C) in the inner control loop and a Proportional Integral Fuzzy Controller (PI-FC) with integration of controller output (Fuzzy-Of-TP-CS) and a PI-FC ... Show more
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4 Tensor Product-Based Model Transformation Technique Applied to Modeling Magnetic Levitation Systems
Hedrea EL; Precup RE (-); Tanaseanu D 23rd IEEE International Conference on Intelligent Engineering Systems (INES) 2019 | 2019 IEEE 23RD INTERNATIONAL CONFERENCE ON INTELLIGENT ENGINEERING SYSTEMS (INES 2019) , pp.179-184
The derivation of a Tensor Product (TP)-based model of magnetic levitation systems using the TP-based model transformation method is proposed. The TP model approximates the behavior of the plant, but exhibiting a numerical approximation error. Finally, the behavior of the TP model is compared to the laboratory equipment behavior taking into consideration two testing scenarios. The experimental ... Show more
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1 Citation 47 References

5 Tensor Product-Based Model Transformation and Sliding Mode Control of Electromagnetic Actuated Clutch System
Hedrea EL; Precup RE (-); Roman RC IEEE International Conference on Systems, Man and Cybernetics (SMC) 2019 | 2019 IEEE INTERNATIONAL CONFERENCE ON SYSTEMS, MAN AND CYBERNETICS (SMC) , pp.1402-1407
This paper suggests two combinations of Tensor Product (TP)-based model transformation plus sliding mode control applied to the position control of nonlinear electromagnetic actuated clutch systems. Two cascade control system structures that consist of a TP-based controller in the inner control loop and a sliding mode-based controller in the outer control loop are presented. The proposed contro ... Show more
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 6 Results on Tensor Product-based Model Transformation of Magnetic Levitation Systems

Hedrea, EL; Precup, RE and Bojan-Dragos, CA

2019 | ACTA POLYTECHNICA HUNGARICA 16 (9) , pp.93-111

In this paper the TP-based model transformation method is used in order to obtain a Tensor Product-based model of magnetic levitation systems which approximates the behavior of the plant, but exhibiting a numerical approximation error. In order to test the derived TP model, the behavior of the TP model is compared to the laboratory equipment behavior taking into consideration five testing scenes

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 7 Cascade Control Solutions for Level Control of Vertical Three Tank Systems

Hedrea, EL; Precup, RE; Popovici, D

IEEE 13th International Symposium on Applied Computational Intelligence and Informatics (SACI)

2019 | IEEE 13TH INTERNATIONAL SYMPOSIUM ON APPLIED COMPUTATIONAL INTELLIGENCE AND INFORMATICS (SACI 2019) , pp.353-358

This paper presents the design and validation of two cascade control system (CCS) structures for the level control of vertical three tank systems. The first CCS structure consists of a state feedback controller in the inner control loop and a Proportional-Integral-Derivative (PID) controller in the outer control loop and the second CCS structure consists of a Tensor Product-based controller

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 8 Control Solutions for Vertical Three-Tank Systems

Bojan-Dragos, CA; Szedlik-Stoian, AB; Minetu, IC

12th IEEE International Symposium on Applied Computational Intelligence and Informatics (SACI)

2018 | 2018 IEEE 12TH INTERNATIONAL SYMPOSIUM ON APPLIED COMPUTATIONAL INTELLIGENCE AND INFORMATICS (SACI) , pp.593-598

The paper presents the design of several classical low-cost control systems (CCS) with Integral Controllers (I), Proportional-Integral Controller (PI), Proportional-Integral-Derivative Controller (PID) and adaptive Proportional-Integral control systems dedicated to the level control of vertical three-tank systems (V3TS). To design the proposed control solutions, the least-squares identification

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Bojan-Dragos, CA; Radac, MB; ...; Tanasoiu, OM

2018 | ACTA POLYTECHNICA HUNGARICA 15 (9) , pp.89-108

The paper presents three Gain-Scheduling Control (GS-C) design procedures starting with classical Proportional-Integral (PI) controllers, resulting in PI-GS-C structures for positioning control of a Magnetic Levitation System (MLS) with two laboratory electromagnets. The nonlinear mathematical model of the MLS is first linearized at seven operating points and next stabilized by a state feedback

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 10 Cascade Control Solutions for Maglev Systems

Hedrea, EL; Precup, RE; ...; Marinca, M

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

2018 | 2018 22ND INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) , pp.20-26

In this paper a cascade control system (CCS) structure made of a combination of tensor product (TP)-based model transformation and of fuzzy control is designed for the position control of the magnetic levitation (Maglev) laboratory equipment. The linearized Maglev system model was first stabilized using two control method: a state feedback control structure (SF-CS) and a Proportional-Integral-

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 11 Tensor Product-Based Model Transformation Technique Applied to Modeling Vertical Three Tank Systems

Hedrea, EL; Precup, RE; ...; Hedrea, C

12th IEEE International Symposium on Applied Computational Intelligence and Informatics (SACI)

2018 | 2018 IEEE 12TH INTERNATIONAL SYMPOSIUM ON APPLIED COMPUTATIONAL INTELLIGENCE AND INFORMATICS (SACI) , pp.63-68

This paper presents the design and validation of the Tensor Product (TP) based model of vertical three tank systems laboratory equipment using the Tensor Product based model transformation technique. The TP model is designed in order to approximately mimic the behavior of the original process, but having numerical error. Finally, the behaviors of the TP model and the linearized model are compar

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 12 Comparative Study of Control Structures for Maglev Systems

Hedrea, EL; Bojan-Dragos, CA; ...; Petru, FM

18th IEEE International Power Electronics and Motion Control Conference (IEEE PEMC)

2018 | 2018 IEEE 18TH INTERNATIONAL POWER ELECTRONICS AND MOTION CONTROL CONFERENCE (PEMC) , pp.657-662

This paper presents the design of three control structures that control the ferromagnetic sphere position of a magnetic levitation (Maglev) system. The control structure are a Tensor Product-based model transformation control structure, an anti-windup Proportional-Integral-Derivative Gain-Scheduling control structure (aw-PID-GS-CS) and the combination of these two structures (CCS). Some real t

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 13 Tensor Product-Based Model Transformation for Level Control of Vertical Three Tank Systems

Hedrea, EL; Bojan-Dragos, CA; ...; Teban, TA

21st IEEE International Conference on Intelligent Engineering Systems (INES)

2017 | 2017 21ST INTERNATIONAL CONFERENCE ON INTELLIGENT ENGINEERING SYSTEMS (INES) , pp.113-118

This paper presents a Tensor Product (TP)-based model transformation as an application to the level control of vertical three tank systems. At first the TP model of the plant is obtained from the linear parameter-varying model of the controlled process by applying the TP-based model transformation. The TP controller design is then based by a parallel distributed compensation technique. The obta

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 14 Tensor Product-Based Model Transformation for Position Control of Magnetic Levitation Systems

Hedrea, EL; Bojan-Dragos, CA; ...; Hedrea, C

26th IEEE International Symposium on Industrial Electronics (ISIE)

2017 | 2017 IEEE 26TH INTERNATIONAL SYMPOSIUM ON INDUSTRIAL ELECTRONICS (ISIE) , pp.1141-1146

This paper presents an application of the Tensor Product-based model transformation to the real-time position control of magnetic levitation systems. Three cases that depend on the number of singular values are presented. All case studies are validated by experiments conducted related to the sphere position control of a laboratory magnetic levitation system.

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