

Ioana NAȘCU

PERSONAL DATA

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RESEARCH INTERESTS

- Advanced process control: model based predictive control, multiparametric model based predictive control, adaptive model based predictive control, advanced estimation techniques, robust control.
- Hybrid systems, nonlinear systems, event based control, studies under uncertainties, AI and machine learning control.
- Control of Drug delivery systems focused on volatile and intravenous anaesthesia including hypnosis, muscle relaxation and analgesia; personalized healthcare; tissue engineering.
- Control of wastewater treatment plants, advanced model based control, hierarchical control.
- Model based control, hierarchical control and optimization for continuous pharmaceutical processes; integrating Industry 4.0 concepts into pharmaceutical processes (Pharma 4.0).

EDUCATION

JAN 2012 | IMPERIAL COLLEGE LONDON, London, UK
JUN 2016 | Department of Chemical Engineering Centre of Process System Engineering
PhD in CHEMICAL ENGINEERING
PhD Thesis Title: "Advanced Multiparametric Optimization and Control Studies for Anaesthesia"
PhD Thesis Advisor: Prof. Stratos Pistikopoulos
Research area: Model Predictive Control, Multiparametric Model Predictive Control, Simultaneous Multiparametric Model Predictive Control and Estimation, Hybrid Systems, Chemical Processes, Drug Delivery Systems, Biological Processes, Wastewater Treatment Systems, Biomedical Systems

JAN 2011 | GHENT UNIVERSITY, Ghent, Belgium
JUN 2011 | Department of Electrical Engineering, Systems and Automation
SEPT 2009 | TECHNICAL UNIVERSITY OF CLUJ NAPOCA, Cluj Napoca, Romania
JUN 2011 | Department of Automation, Faculty of Automation and Computer Science
Master Degree in CONTROL ENGINEERING
GPA: 9.93/10, first class honors, valedictorian
Master Thesis Title: "Advanced Control in Biomedical Field"
Master Thesis Advisor: Prof. R. De Keyser
Research area: Model Based Predictive Control, Adaptive control, Robust control, Nonlinear systems, Drug Delivery Systems, Biomedical Systems

JUN 2009 | TECHNICAL UNIVERSITY OF CLUJ NAPOCA, Cluj Napoca, Romania
SEPT 2005 | Department of Automation, Faculty of Automation and Computer Science
Diploma in CONTROL ENGINEERING
GPA: 9.74/10, first class honors, valedictorian
Dissertation Title: "Drug Dosing Control during Anaesthesia for Patients Undergoing Surgery"
Research area: System theory, System Identification, Continuous plant control, Robot control systems, Power plant control, Optimization techniques, Control Instrumentation, Industrial informatics

PROFESSIONAL EXPERIENCE - INDUSTRIAL RESEARCH

MAR 2017 | ELI LILLY AND COMPANY- SMALL MOLECULE DESIGN AND DEVELOPMENT
Mar 2019 | *Postdoctoral Research Associate*
Research area: Control Strategies for Pharmaceutical Processes
Overall Research Objective: Developing an advanced model predictive controller for a semi-continuous evaporation process designed to work with different APIs/solvent mixtures.

- High fidelity model development (in collaboration with Texas A&M)
- Classical PID control, Model Based Predictive Control, Multiparametric Model Based Predictive Control
- Study the effect of thermodynamics on control performances
- Workflow for the thermodynamic characterization of new APIs in a wide set of solvent mixtures using lean experimental resources
- Coordinating and working with team members on the experiment set-up, collecting data for the process model validation
- Implementing and testing the designed controllers on the real process

PROFESSIONAL EXPERIENCE - ACADEMIC RESEARCH

SEPT 2023 | TECHNICAL UNIVERSITY OF CLUJ NAPOCA, DEPARTMENT OF AUTOMATION
CURRENT | FACULTY OF AUTOMATION AND COMPUTER SCIENCE
Associate Professor
Research area: Advanced Control Strategies with application to Biomedical, Biological and Pharmaceutical Systems

- High fidelity model development
- Process analysis
- Advanced control strategies for biomedical and biological processes
- Advanced control strategies for wastewater treatment plants
- Robust control strategies
- Advanced control strategies for pharmaceutical processes

FEB 2021 | TECHNICAL UNIVERSITY OF CLUJ NAPOCA, DEPARTMENT OF AUTOMATION
SEPT 2023 | FACULTY OF AUTOMATION AND COMPUTER SCIENCE
Assistant Professor
Research area: Advanced Control Strategies with application to Biomedical, Biological and Pharmaceutical Systems

- High fidelity model development
- Process analysis including sensitivity analysis and RGA
- Advanced control strategies for biomedical and biological processes
- Advanced control strategies for perfusion bioreactors with applications in tissue engineering
- Robust control strategies
- Advanced control strategies for pharmaceutical processes

SEPT 2022 | PURDUE UNIVERSITY
SEPT 2023 | DAVIDSON SCHOOL OF CHEMICAL ENGINEERING
Visiting Scholar
Research area: Advanced Control of Pharmaceutical Manufacturing Processes

- High fidelity model development
- Developing a Digital Twin for Continuous Pharmaceutical Manufacturing
- Developing of Advanced control strategies for pharmaceutical processes
- Developing multivariable hierarchic control
- Robust control strategies
- Implementing the developed control strategies on the Continuous Pharmaceutical Manufacturing Pilot Plant

- SEPT 2019 | UNIVERSITY OF SURREY, DEPARTMENT OF CHEMICAL AND PROCESS ENGINEERING
 SEPT 2022 | *Associate Lecturer*
Research area: Advanced Control Strategies with applications to Biomedical and Biological Systems
Overall Research Objective: Developing high fidelity models and advanced control strategies for perfusion
- High fidelity model development
 - Coordinating and working with different departments on the study of bioreactors in 3D Cell Culture and Tissue Engineering
 - Classical PID Control, Model Based Predictive Control
 - Robust control strategies
 - Validating the the process model with the experiment setup
 - Implementing and testing the designed controllers on the real process
- AUG 2021 | GHENT UNIVERSITY - FACULTY OF ENGINEERING AND ARCHITECTURE
 DEPARTMENT OF ELECTRICAL ENERGY, METALS, MECHANICAL CONSTRUCTIONS AND SYSTEMS
 RESEARCH LAB ON DYNAMICAL SYSTEMS AND CONTROL
Visiting Researcher
Research area: An Adaptive Multi-drug Infusion Control system for general Anesthesia in major Surgery
- Identify multivariable models and minimize the large uncertainties in patient response
 - Design multivariable optimal predictive control methodologies
 - Maximize performance of the closed loop
- SEPT 2019 | TECHNICAL UNIVERSITY OF CLUJ NAPOCA, DEPARTMENT OF AUTOMATION
 FEB 2021 | FACULTY OF AUTOMATION AND COMPUTER SCIENCE
Associate Lecturer
Research area: Advanced Control Strategies
- High fidelity model development
 - Incorporate AI with Model predictive control strategies
 - Robust control strategies
 - Teaching the Continuous Process Control Course
- APR 2019 | KEY LABORATORY OF ADVANCED CONTROL AND OPTIMIZATION FOR CHEMICAL PROCESSES, EAST
 CHINA UNIVERSITY OF SCIENCE AND TECHNOLOGY
 Sept 2022 | *Postdoctoral Research Associate*
Research area: Advanced Control Strategies with applications to Biomedical and Biological Systems and the petrochemical industry
Overall Research Objective: Developing advanced model predictive control strategies and advanced estimation techniques
- Process Modeling of Biomedical and Biological systems
 - Coordinating and working with different departments on the study of biomedical and biological systems as well as petrochemical processes
 - Development of PID and advanced model predictive control strategies
 - Robust control strategies
- JUL 2016 | TEXAS A&M ENERGY INSTITUTE AND ARTIE MCFERRIN DEPARTMENT OF CHEMICAL ENGINEERING
 Mar 2019 | *Postdoctoral Research Associate*
Research area: Advanced Control Strategies with applications to Biomedical and Biological Systems
Overall Research Objective: Developing advanced explicit model predictive controllers for Drug Delivery Systems. Developing model based predictive controllers and multiparametric model based predictive controllers for wastewater treatment systems.
- High fidelity model development
 - Advanced Estimation techniques
 - Model Based Predictive Control and Multiparametric Model Predictive Control
 - Hybrid control
 - Robust control strategies
 - Advanced process optimization and studies under uncertainties

JAN 2012 | IMPERIAL COLLEGE LONDON, DEPARTMENT OF CHEMICAL ENGINEERING,
 JUN 2016 | CENTRE OF PROCESS SYSTEM ENGINEERING
Research Assistant
Research area: Advanced Multiparametric Optimization and Control Strategies for Biomedical and Biological Systems
Overall Research Objective: Developing advanced control strategies for Drug Delivery Systems such as the volatile and intravenous anaesthesia process. Developing advanced control strategies for wastewater treatment systems.

- Process Modeling and Parameters Estimation
- Model Based Predictive Control and Multiparametric Model Predictive Control
- Simultaneous Multiparametric Model Predictive Control and Estimation
- Hybrid control
- Robust control strategies
- Advanced process optimization and studies under uncertainties

PROFESSIONAL EXPERIENCE - TEACHING

Delivery of tutorials & lectures, supervision & assistance with the course project, preparation, invigilation and correction of exam papers, office hours for student assistance/guidance

SEPT 2023 | TECHNICAL UNIVERSITY OF CLUJ NAPOCA, DEPARTMENT OF AUTOMATION
 CURRENT | FACULTY OF AUTOMATION AND COMPUTER SCIENCE
Associate Professor
Course: Continuous Process Control

- Dynamics and Control of Boilers/ Steam Generators
- Dynamics and Control of Heat Exchangers
- Dynamics and Control of Chemical Reactors
- Dynamics and Control of Wastewater Treatment Processes

FEB 2021 | TECHNICAL UNIVERSITY OF CLUJ NAPOCA, DEPARTMENT OF AUTOMATION
 SEPT 2023 | FACULTY OF AUTOMATION AND COMPUTER SCIENCE
Assistant Professor
Course: Electrical and Electronic Control Equipment

- Sensors, transducers, transmitters
- Programmable Logic Controllers (PLC)
- Distributed Control Systems (DCS) Treatment Processes

Course: Continuous Process Control

- Dynamics and Control of Boilers/ Steam Generators
- Dynamics and Control of Heat Exchangers
- Dynamics and Control of Chemical Reactors
- Dynamics and Control of Wastewater Treatment Processes

SEPT 2020 | TECHNICAL UNIVERSITY OF CLUJ NAPOCA, DEPARTMENT OF AUTOMATION
 JAN 2021 | FACULTY OF AUTOMATION AND COMPUTER SCIENCE
Associate Lecturer
Course: Continuous Process Control

- Dynamics and Control of Boilers/ Steam Generators
- Dynamics and Control of Heat Exchangers
- Dynamics and Control of Chemical Reactors
- Dynamics and Control of Wastewater Treatment Processes

- OCT 2019 | UNIVERSITY OF SURREY, DEPARTMENT OF CHEMICAL AND PROCESS ENGINEERING
KEY LABORATORY OF ADVANCED CONTROL AND OPTIMIZATION FOR CHEMICAL PROCESSES, EAST
CHINA UNIVERSITY OF SCIENCE AND TECHNOLOGY
Associate Lecturer
Course: Advanced Process Control
- Introduction to systems theory and control engineering
 - Introduction to system modeling
 - Analysis of linear continuous systems
 - Controller design
 - Control systems in state space
 - Model predictive control
- MAY 2015 | TEXAS A&M ENERGY INSTITUTE AND ARTIE MCFERRIN DEPARTMENT
MAR 2017 | OF CHEMICAL ENGINEERING
Teaching Assistant
Course: Advanced Process Optimization I & II
- Multiparametric Linear and Quadratic Programming
 - Multiparametric Non-Linear Programming
 - Multiparametric Mixed-Integer Quadratic and Non-Linear Programming
 - Parametric Global Optimization
 - Model Predictive Control via Multi-Parametric Programming
- JAN 2012 | IMPERIAL COLLEGE LONDON, CHEMICAL ENGINEERING DEPARTMENT
MAY 2015 | *Teaching Assistant*
Course: Advanced Process Optimization (3rd, 4th year UG and MSc students)
Course: Numerical Methods (3rd, 4th year UG and MSc students)
- Linear Systems
 - Nonlinear Systems
 - Mixed Integer Linear Programming
- SEPT 2009 | TECHNICAL UNIVERSITY OF CLUJ NAPOCA, DEPARTMENT OF AUTOMATION
JUNE 2011 | FACULTY OF AUTOMATION AND COMPUTER SCIENCE
Teaching Assistant
Course: Process Instrumentation
- Sensors, transducers, transmitters
 - Programmable Logic Controllers (PLC)
 - Distributed Control Systems (DCS)
- Course:** Continuous Process Control
- Dynamics and Control of Boilers/ Steam Generators
 - Dynamics and Control of Heat Exchangers
 - Dynamics and Control of Chemical Reactors
 - Dynamics and Control of Wastewater Treatment Processes
- JAN 2016 | TEXAS A&M ENERGY INSTITUTE AND ARTIE MCFERRIN DEPARTMENT OF CHEMICAL ENGINEERING
Seminar: Advanced Multiparametric Optimization and Control Studies for Anaesthesia
- JUL 2014 | CAPEC-PROCESS RESEARCH CENTRE, DTU, COPENHAGEN, DENMARK
Course: Advanced Process Optimization
Delivery of tutorials, coordination & correction of the course project and student evaluation

PROFESSIONAL EXPERIENCE - OTHER

- SEPT 2021 | 11TH IFAC SYMPOSIUM ON BIOLOGICAL AND MEDICAL SYSTEMS
Plenary Talk - Invited Speaker
Title: Towards Industry 4.0 and Continuous Pharmaceutical Manufacturing

SEPT 2021	DISTINGUISHED LECTURER IN THE SERIES OF SPECIALISED COURSES AS PART OF DOCTORAL SCHOOLS AT GHEENT UNIVERSITY, BELGIUM DEPARTMENT OF ELECTROMECHANICS, SYSTEMS AND METALS ENGINEERING, RESEARCH LAB ON DYNAMICAL SYSTEMS AND CONTROL <i>course is part of the series: Multivariable Control for Industrial and Manufacturing Processes, with the specialised core topic on Pharmaceutical Processes.</i> <i>The course is supported by the CESPE – centre for excellence in sustainable pharmaceutical engineering, at the Ghent University, Belgium and affiliated pharmaceutical industries.</i>
2015 Current	REVIEWER - JOURNAL OF PROCESS CONTROL REVIEWER - COMPUTERS AND CHEMICAL ENGINEERING
OCT 2016	IEEE INTERNATIONAL CONFERENCE ON SYSTEMS, MAN, AND CYBERNETICS <i>Session Chair</i> Session: Workshop Women in Engineering
MAY 2016	IEEE-TTTC INTERNATIONAL CONFERENCE ON AUTOMATION, QUALITY AND TESTING, ROBOTICS <i>Session Chair</i> Session: Modeling and control of chemical processes

PROFESSIONAL EXPERIENCE - RESEARCH PROJECTS

JAN 2012 JUN 2014	MOBILE (MODELLING, CONTROL AND OPTIMIZATION OF BIOMEDICAL SYSTEMS) ERC PROJECT <i>Research Assistant</i> <ul style="list-style-type: none"> • Develop models and model based control and optimization methods and tools for drug delivery systems • Participation and presentation of research results • Preparation of technical reports & financial statements
JAN 2014 JUN 2016	OPTICO (MODEL BASED OPTIMIZATION AND CONTROL FOR PROCESS INTENSIFICATION IN CHEMICAL AND BIOPHARMACEUTICAL PROCESSES) EUROPEAN PROJECT <i>Research Assistant</i> <ul style="list-style-type: none"> • Research activities executed in collaboration with 13 international, industrial and academic partners • Participation and presentation of research results in bi-annual partner meetings • Preparation of technical reports & financial statements
JAN 2014 JUN 2016	ESE (ENERGY SYSTEM ENGINEERING) MARIE CURIE ACTIONS <i>Project coordinator and Research Assistant</i> <ul style="list-style-type: none"> • Research activities executed in collaboration with 3 European Academic Groups (Imperial College London – UK, University of Pannonia – Hungary and Aristotle University of Thessaloniki, Greece) and 3 university groups from China (Tsinghua University and Fudan University) and South Korea (Yonsei University) • Secondment to Yonsei University, South Korea as Researcher • Secondment to Yonsei University, South Korea as Experienced • Preparation of technical reports & financial statements
FEB 2017 FEB 2019	INDUSTRIAL GRANT - ELI LILLY & COMPANY <i>High Fidelity Dynamic Modeling for Real Time State Estimation and Control of a Continuous Manufacturing Process for Pharmaceutical Drug Product, Industrial Partnership</i> <i>Project leader</i>
MAI 2022 MAI 2023	RESEARCH-DEVELOPMENT-INNOVATION CONTRACT <i>Advanced control system for optimizing the operation of aeration bioreactors</i> <i>Project leader</i>
JUL 2022 JUL 2024	RESEARCH-DEVELOPMENT-INNOVATION CONTRACT <i>Advanced control system for optimizing the operation of aeration bioreactors</i> <i>Project manager</i>

MAI 2023	ROMANIAN ACADEMY OF SCIENTISTS RESEARCH PROJECT COMPETITION AOSR-TEAMS <i>Development of advanced control and optimization strategies for processes in the pharmaceutical industry by integrating digital twin and machine learning concepts</i> Project Leader
MAI 2025	
JAN 2025	TINERE ECHIPE (TE)-GRANT <i>Digitalizarea protocolului chirurgical bazat pe evenimente pentru identificarea sistemului si control robust in anestezia generala, NR 56TE/2025</i> Project Member
DEC 2026	

SOFTWARE AND PROGRAMMING SKILLS

Intermediate Knowledge: gPROMS, GAMS, Python, COMSOL, LabView, AutoCAD, Java, PHP, C++
Advanced Knowledge: Matlab, CX Programmer - Omron PLC, Simatic S7 – Siemens PLC

AWARDS AND AFFILIATIONS

Erasmus Scholarship, 2011, 6 months, Host institution: Gent University, Belgium

The Armen H. Zemanian Best Paper Award for the year 2016 for the best paper published in 2016 in Circuits, Systems, and Signal Processing journal (237 papers) in the area of Circuits and Systems

The M.N.S. Swamy Best Paper Award for the best paper published in 2015 and 2016 in Circuits, Systems, and Signal Processing journal (440 papers) in the area of Circuits and Systems.

Member, American Institute of Chemical Engineers (AIChE)

Member, Institute of Electrical and Electronics Engineers (IEEE)

PUBLICATIONS

Books

1. Ioana Nascu, Ioan Nascu. Continuous Process Control I (in Roumanian), UTPress, 2025, ISBN 978-606-737-787-3.
2. Pistikopoulos, E. N., I. Nascu and E. Velliou (2018). Modelling Optimization and Control of Biomedical Systems, John Wiley & Sons Ltd.
3. Ioan Naşcu, Ioana Naşcu, Ruben Crişan, Silviu Folea, Automation equipment and systems (in Romanian) , U.T. PRESS, Cluj Napoca, 2015. ISBN 978-606-737-099-7
4. Ruben Crişan, Ioana Naşcu, Continuous process control systems (in Roumanian) , U.T. PRESS, Cluj Napoca, 2013, ISBN 978-973-662-794-1
5. Papathanasiou, M. M., M. Onel, I. Nascu and E. N. Pistikopoulos. Computational tools in the assistance of personalized healthcare. Quantitative Systems Pharmacology. ISBN 978-0444639646. DOI 10.1016/b978-0-444-63964-6.00006-4 Elsevier, book chapter

Full Journal Publications

1. Nascu, Ioana, N. A. Diangelakis, Yan-Shu Huang and Zoltan K. Nagy. 2025. 'Advanced Optimisation and Control Strategies for a Rotary Tablet Press in Pharmaceutical Industry', Computers & Chemical Engineering, draft
2. Naşcu, I., Diangelakis, N. A., Muñoz, S. G. and Pistikopoulos, E. N. (2023) 'Advanced model predictive control strategies for evaporation processes in the pharmaceutical industries', Computers & Chemical Engineering, 173, 108212.
3. Naşcu, Ioana, Daniel Sebastia-Saez, Tao Chen, Ioan Nascu, and Wenli Du. 2022. Global Sensitivity Analysis for a Perfusion Bioreactor based on CFD Modelling, Computers & Chemical Engineering, Volume 163, July 2022, <https://doi.org/10.1016/j.compchemeng.2022.107829>
4. Ghita, Mihaela, Isabela Birs, Dana Copot, Ioana Nascu, and Clara-Mihaela Ionescu. 2022. 'Impedance Spectroscopy Sensing Material Properties for Self-Tuning Ratio Control in Pharmaceutical Industry', Applied Sciences, 12: 509.
5. Jinqun Zheng , Wenli Du , Ioana Nascu , Yuanming Zhu , Weimin Zhong. "An interval type-2 fuzzy controller based on data driven parameters extraction for cement calciner process", IEEE ACCESS, 2020. 8: p. 61775-61789, 2020, doi: 10.1109/ACCESS.2020.2983476

6. Jingjing Guo, Wenli Du, Ioana Nascu, "Adaptive modeling of fixed bed reactor with multi-cycle and multi-mode characteristics based on transfer learning and just-in-time learning", *Industrial Engineering Chemistry Research*, 2020. 59(14): p. 6629-6637.
7. Naşcu, I., Oberdieck, R., & Pistikopoulos, E. N. (2017). Explicit hybrid model predictive control strategies for intravenous anaesthesia. *Special issue of Computers and Chemical Engineering*, vol. 106, pp. 814-825. doi:10.1016/j.compchemeng.2017.01.033
8. Naşcu, I., & Pistikopoulos, E. N. (2017). Modeling, estimation and control of the anaesthesia process. *Special issue in Computers and Chemical Engineering in honor of Prof. Rafiq Gani*, vol. 107, pp. 318-332. doi:10.1016/j.compchemeng.2017.02.016
9. Nascu, I.; Pistikopoulos, E. N. A Multiparametric Model-Based Optimization & Control Approach to Anaesthesia. *The Canadian Journal of Chemical Engineering* 2016, vol. 94 (11), pp. 2125-2137.
10. Nascu, I., A. Krieger, C. M. Ionescu and E. N. Pistikopoulos (2015). "Advanced Model-Based Control Studies for the Induction and Maintenance of Intravenous Anaesthesia." *IEEE Transactions on Biomedical Engineering*, vol. 62(3):pp. 832-841
11. Pistikopoulos, E. N., N. A. Diangelakis, R. Oberdieck, M. M. Papathanasiou, I. Nascu and M. Sun (2015). "PAROC-An integrated framework and software platform for the optimisation and advanced model-based control of process systems." *Chemical Engineering Science.*, vol. 136, pp. 115-138
12. Oberdieck, R.; Diangelakis, N. A.; Papathanasiou, M. M.; Nascu, I.; Pistikopoulos, E. N. "POP - Parametric Optimization Toolbox". *Industrial & Engineering Chemistry Research* 2016, vol. 55 (33), pp. 8979-8991.
13. Oberdieck, R., N. A. Diangelakis, I. Nascu, M. M. Papathanasiou, M. Sun, S. Avraamidou and E. N. Pistikopoulos (2016). "On multi-parametric programming and its applications in process systems engineering." *Chemical Engineering Research and Design* vol. 116: pp. 61-82.
14. Harja, G., I. Nascu, C. Muresan and I. Nascu (2016). "Improvements in Dissolved Oxygen Control of an Activated Sludge Wastewater Treatment Process." *Circuits, Systems and Signal Processing* vol. 35(6): pp. 2259-2281
15. Ionescu, C. M., I. Nascu and R. De Keyser (2013). "Lessons learned from closed loops in engineering: towards a multivariable approach regulating depth of anaesthesia." *Journal of Clinical Monitoring and Computing*: vol. 28(6), pp. 537-546

Conference Publications

1. Ioana Naşcu, Gabriel Harja, Mihai Stanese, Ioan Naşcu. 2024. 'Alternating aeration control and optimisation in activated sludge processes', 2024 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), 16-18 May, Cluj-Napoca, Romania
2. Ioana Naşcu, Gabriel Harja, Ioan Naşcu. 2024. 'Predictive Control of Intermittent Aeration in Activated Sludge Processes', *WSEAS Transactions on Systems and Control*, 2024, Vol.19, page 494
3. Ioana Naşcu, Z. Nagy, Ioan Nascu. 2023. 'Application of Model Based Predictive Control for a Rotary Tablet Press', *International Conference on Electrical, Computer, Communications and Mechatronics Engineering, ICECCME 2024*, Male, 4-6 nov.2024.
4. Ioana Naşcu, Wenli Du, Ioan Naşcu. 2023. 'Aeration Optimization and Control for Wastewater Treatment Processes', 33rd European Symposium on Computer Aided Process Engineering (ESCAPE33), Athens, Greece, 18-21 June 2023, *Computer Aided Chemical Engineering*, Vol 52, pp 1637-1642, ISSN 1570-7946, DOI 10.1016/B978-0-443-15274-0.50260
5. Ioana Naşcu, G. Harja, Ioan Naşcu. 2023. 'An Auto-tuning method for alternating aeration control in activated sludge processes', *IEEE 2023 27th International Conference on Circuits, Systems, Communications and Computers (CSCC)*, Rhodes, Greece, 19-22 iul.2023, IEEE Catalog Number: CFP23B16-ART, ISBN: 979-8-3503-3759-4
6. Nascu, Ioana, N. A. Diangelakis, Yan-Shu Huang and Zoltan K. Nagy. 2023. 'Multiparametric Model Predictive Control Strategies for a Rotary Tablet Press in Pharmaceutical Industry', 33rd European Symposium on Computer Aided Process Engineering; *Computer Aided Chemical Engineering*.
7. Naşcu, I., Du, W. and Ioan, N. (2022) 'An Auto-tuning method for aeration control in activated sludge wastewater treatment processes', in *IEEE 2022 International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME 2022)*, Male, 16-18 nov.2022,
8. Nascu, Ioana, N. A. Diangelakis, and E. Pistikopoulos. 2022. 'Multiparametric Model Predictive Control Strategies for Evaporation Processes in Pharmaceutical Industries', 32nd European Symposium on Computer Aided Process Engineering; Elsevier, 2016;, *Computer Aided Chemical Engineering*.
9. Nascu, Ioana, Ioan Nascu, and W. Du. 2022. 'Optimization and Control of a Perfusion Bioreactor System in Tissue Engineering', *Proceedings of 2022 IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics, AQTR*, in press.

10. Nascu, Ioana, Tao Chen, and Wenli Du. 2021. 'Global Sensitivity Analysis for a perfusion bioreactor system in tissue engineering', IFAC-PapersOnLine, 54: 550-55
11. Nascu, I., T. Chen, W. Du, and I. Nascu. 2021. "Global Sensitivity Analysis for the input parameters of a Perfusion Bioreactor System in Tissue Engineering." In 2021 25th International Conference on System Theory, Control and Computing (ICSTCC), 172-77
12. Nascu, I., D. Sebastia-Saez, T. Chen, and W. Du. 2021. "A combined computational-fluid-dynamics model and control strategies for perfusion bioreactor systems in tissue engineering." In IFAC-PapersOnLine, 324-29
13. Ioana Naşcu, Ioan Naşcu, Wen-Li Du, Sai Gu, Predictive Control for Continuous Stirred Tank Reactors, 2019 International Conference on Informatics, Control and Robotics (ICICR 2019) ISBN:978-1-60595-633-6, DEStech Trans on Engineering and Technology Research, ISSN: 2475-885X, DOI 10.12783/dtetr/icicr2019/30554
14. Ioana Naşcu, Ioan Naşcu, MBPC Control for Continuous Stirred Tank Reactors, Advances in Technology Innovation(AITI), 2018, ISSN 2415-0436
15. Ioana Naşcu, Ioan Naşcu, Multilevel predictive control system for an activated sludge wastewater treatment process, 5th Int.Conf. on Mathematics and Computers in Sciences and Industry- MCSI2018,Corfu Island, Greece, August 25-27, 2018
16. Naşcu Ioana; Pistikopoulos E.; Naşcu Ioan, Hybrid Multiparametric Model Predictive Control with Application to the Neuromuscular Blockade, 2018 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), May 24-26, Cluj-N, Romania, DOI: 10.1109/AQTR.2018.8402747
17. Ioana Naşcu, Ioan Naşcu, Improving Activated Sludge Wastewater Treatment Process Efficiency Using Predictive Control, Advances in Technology Innovation(AITI), Vol.3 No.2 2018, ISSN 2415-0436
18. Nascu, I. and E. N. Pistikopoulos (2017). Multiparametric model predictive control strategies of the hypnotic component in intravenous anesthesia. 2016 IEEE International Conference on Systems, Man, and Cybernetics, SMC 2016 - Conference Proceedings.
19. Nascu, I.; Oberdieck, R.; Pistikopoulos, E. N. "A framework for Simultaneous State Estimation and Robust Hybrid Model Predictive Control in Intravenous Anaesthesia". 26th European Symposium on Computer Aided Process Engineering; Elsevier, 2016;, Computer Aided Chemical Engineering vol. 38 pp 1057-1062.
20. Nascu, I. and E. Pistikopoulos, "Multiparametric Model Predictive Control and State Estimation of the Hypnotic Component in Anesthesia", Proceedings of 2016 IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics, AQTR 2016, Cluj-Napoca, DOI: 10.1109/AQTR.2016.7501357
21. Nascu, I.; Diangelakis, N. A.; Oberdieck, R.; Papatthanasious, M. M.; Pistikopoulos, E. N. "Explicit MPC in real-world applications: The PAROC framework". American Control Conference (ACC); 2016; pp 913-918.
22. Ioana Naşcu, Ioan Naşcu, G. Vlad, Predictive adaptive control of an activated sludge wastewater treatment process, Advances in Technology Innovation(AITI), vol.1 No.2 2016, pp: 38-40, ISSN 2415-0436
23. Ioana Naşcu, Ioan Naşcu, Modelling and optimization of an activated sludge wastewater treatment process, Computer Aided Chemical Engineering, vol 38, 2016, pp 1159-1164, ISBN: 978-0-444-63428-3, doi:10.1016/B978-0-444-63428-3.50198-3
24. Nascu, I.; Oberdieck, R.; Pistikopoulos, E. N. "A framework for hybrid multi-parametric model-predictive control with application to intravenous anaesthesia". 12th International Symposium on Process Systems Engineering and 25th European Symposium on Computer Aided Process Engineering; Elsevier,2015,Computer Aided Chemical Engineering vol. 37, pp 719-724.
25. Nascu, I.; Oberdieck, R.; Pistikopoulos, E. N. "An explicit Hybrid Model Predictive Control Strategy for Intravenous Anaesthesia". 9th IFAC Symposium on Biological and Medical Systems (BMS); 2015;, IFAC-PapersOnLine vol. 48 pp 58-63.
26. Nascu, I.; Oberdieck, R.; Pistikopoulos, E. N. "Offset-free explicit hybrid model predictive control of intravenous anaesthesia". IEEE International Conference on Systems, Man and Cybernetics (SMC); 2015; pp 2475-2480.
27. Nascu, I., R. Oberdieck and E. N. Pistikopoulos (2015). Simultaneous multi-parametric hybrid model predictive control and estimation with application to the intravenous anaesthesia. Computing and Systems Technology Division 2015 - Core Programming Area at the 2015 AIChE Annual Meeting.
28. Nascu, I.; Lambert, R. S. C.; Krieger, A.; Pistikopoulos, E. N. "Simultaneous multi-parametric model predictive control and state estimation with application to distillation column and intravenous anaesthesia". 24th European Symposium on Computer Aided Process Engineering; Elsevier, 2014;, Computer Aided Chemical Engineering vol. 33, pp 541-546.
29. Nascu, I.; Lambert, R. S. C.; Pistikopoulos, E. N. "A combined estimation and multi-parametric model predictive control approach for intravenous anaesthesia". IEEE International Conference on Systems, Man and Cybernetics; 2014; pp 2458-2463.
30. Nascu, Ioana, Ionescu CM, Nascu I, De Keyser R, "Adaptive EPSAC predictive control of the hypnotic component in anesthesia", Proceedings of 2012 IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics, AQTR 2012, May 24-27, Cluj-N, Romania, pp:103-108, IEEEExplore DOI: 10.1109/AQTR.2012.6237683
31. Nascu, Ioana, Ionescu CM, Nascu I, De Keyser R., "Evaluation of three protocols for automatic DOA

- regulation using Propofol and Remifentanyl “, Proceedings of 9th IEEE International Conference on Control & Automation 2011, Santiago, Chile, 19-21 Dec. 2011, pp: 573 – 578, ISBN: 978-1-4577-1475-7,
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Oral Presentations

1. Naşcu, I., Sebastia-Saez, D, Chen, T. and Du, W., A Combined Computational-Fluid-Dynamics Model and Advanced Control Strategies for Direct Perfusion Bioreactor Systems, AIChE 2020, Virtual AIChE Annual Meeting, Oral presentation
2. Naşcu, I., N. A. Diangelakis, S. Garcia-Munoz and E.N. Pistikopoulos, Advanced, Material-Aware Model Predictive Control Strategies for Evaporation Processes in the Pharmaceutical Industries, AIChE 2018, Pittsburgh, USA, Oral presentation
3. Naşcu, I., R. Oberdieck, and E.N. Pistikopoulos, A Robust Hybrid Model Predictive Control Framework for Hill curve Model Based Systems, AIChE 2016, San Francisco, USA, Oral presentation
4. Naşcu, I., R. Oberdieck, and E.N. Pistikopoulos, A framework for State Estimation and Robust Hybrid Multi-Parametric Model Predictive Control in Anaesthesia, AIChE 2015, Salt Lake City, USA, Oral presentation
5. Naşcu, I., Romain S. C. Lambert, Efstratios N. Pistikopoulos, A framework for Model Reduction, State Estimation and Multi-Parametric Model Predictive Control in Anaesthesia, AIChE 2014, Atlanta, USA,

LANGUAGES

ROMANIAN: Mothertongue
ENGLISH: Bilingual
SPANISH: Intermediate
FRENCH: Basic Knowledge

OTHER ACTIVITIES

JUN 2009 – SEPT 2006 STUDENT REPRESENTATIVE IN THE UNIVERSITY COUNCIL AND SENATE
JUN 2010 – SEPT 2009 DEPARTMENT FOR TRAINING ACADEMIC STAFF
Technical University of Cluj Napoca

INTERESTS AND ACTIVITIES

Brazilian Jiu Jitsu, Boxing, Wrestling, MMA, Grappling (Silver at Chicago Submission only tournament)
Climbing, Hiking, Skiing, Snowboarding
Poetry, Traveling, Photography