

Curriculum Vitae

Personal information

Surname(s) / First name(s)
Address(es)
Telephone(s)
Email(s)
Nationality(-ies)

Vargas, Alessandro do Nascimento

Universidade Tecnológica Federal do Paraná, Brazil
+55 43 3133 3888
avargas@utfpr.edu.br
Brazilian



Work experience

Name of employer
Occupation
Main activities
Type of business or sector
Dates
Head of laboratory

Universidade Tecnológica Federal do Paraná (UTFPR), Brazil.
Full-time Professor.
Teaching and research.
Education.
Working at UTFPR since February, 2007.
Scientific Director of LabControl [www.labcontrol.xyz]

Education and training

Name of organization providing education and training
Title of qualification awarded
Principal subjects
Supervisor
Dates

Arizona State University (ASU), Tempe, USA.
One month as a Visiting fellow in the Department of Mechanical and Aerospace Engineering, ASU.
Research on the topic "Stability of stochastic systems with delay".
Prof. Matthew Peet [Control.asu.edu].
January-February, 2020.

Name of organization providing education and training
Title of qualification awarded
Principal subjects
Supervisor
Dates

Politecnico di Milano, Dipartimento di Meccanica (Polimi), Italy.
One month as a Visiting fellow.
Research on the topic "Model predictive control of Markov jump linear systems".
Prof. Hamid Reza Karimi.
September, 2019.

Name of organization providing education and training
Title of qualification awarded
Principal subjects
Supervisor
Dates

Universitat Politècnica de Catalunya - BarcelonaTech (UPC), Spain.
Postdoctoral research.
Research on "Stochastic control and engineering applications".
Prof. Jose Rodellar and Prof. Leonardo Acho.
Postdoctoral research: from June 2, 2014 until June 01, 2015. Three additional short periods as a visiting researcher: January 5 to February 16, 2013, July 2013, and April 2018.

Name of organization providing education and training
Title of qualification awarded
Principal subjects
Supervisor
Dates

Basque Center for Applied Mathematics (BCAM), Spain.
Two short periods as a Visiting fellow.
Research on the topic "Switching control systems".
Prof. Enrique Iriondo Zuazua.
(a) January 1 to February 28, 2011; (b) June 29 to July 27, 2012.

Name of organization providing education and training	Universidade Estadual de Campinas (UNICAMP), Brazil.
Title of qualification awarded	Doctorate in Electrical Engineering.
Principal subjects	Research on Markov jump linear systems.
Supervisor	Prof. João Bosco Ribeiro do Val.
Dates	Years (2004-2009)
Name of organization providing education and training	Universidade Estadual de Campinas (UNICAMP), Brazil.
Title of qualification awarded	Master in Electrical Engineering.
Principal subjects	Research on Markov jump linear systems.
Supervisor	Prof. João Bosco Ribeiro do Val.
Dates	Years (2002-2004)
Name of organization providing education and training	Universidade Federal do Espírito Santo (UFES), Brazil.
Title of qualification awarded	Bachelor of Computer Engineering.
Dates	Years (1997-2002)

Personal skills and competences

Mother tongue(s)

Other language(s)

*Self-assessment
European level^(*)*

English

Spanish

Portuguese

English, Spanish

Understanding		Speaking		Writing
Listening	Reading	Spoken interaction	Spoken production	
C1 Proficient user	C1 Proficient user	C1 Proficient user	C1 Proficient user	C1 Proficient user
C1 Proficient user	C1 Proficient user	C1 Proficient user	C1 Proficient user	C2 Proficient user

^(*) Common European Framework of Reference (CEF) level

Grants

Projects

Financial support

- 5 Funding agency: "CNPq, Brazil". Special scholarship for talented researcher with outstanding research productivity (from 2015 up to now). Amount: 11.314€. (given for every three years).
- 4 Funding agency: "CAPES, Brazil". Research project: "Sistemas estocásticos com aplicações em engenharia automotiva [Programa Pesquisador Visitante Especial - PVE s (2013-2015). Processo CAPES 88881.030423/2013-01]". Amount: 43.540€.
- 3 Funding agencies: "BCAM, Bilbao, Spain and Funtef-UTFPR, Brazil". Bilateral research project BCAM-UTFPR: "Control of systems subject to switching parameters (2013-2015)". Amount: on demand.
- 2 Funding agency: "Fundación Carolina, Madrid, Spain". Research project: "Sistemas de control híbridos (2011)". Amount: 3,200€.
- 1 Funding agency: "CNPq, Brazil". Research project: "Estabilidade e Controle em Sistemas Estocásticos (2009-2011)". Amount: 3,560€.

Technology

Projects

Engineering applications

- 4 **Mechanical ventilator for Covid-19 patients:** This project aims to construct low-cost, open-source mechanical ventilators to help patients with Covid-19 in need of artificial air ventilation. Project under development and hosted at Universitat Politècnica de Catalunya, UPC, Barcelona, Spain. Team: Leonardo Acho (UPC), Gisela Pujol (UPC), and Alessandro N. Vargas.
- 4 **Automotive:** Modelling, identification, control, and mechatronics of an automotive electronic throttle body. This research is under development in cooperation with the CoDALab Laboratory at Universitat Politècnica de Catalunya, UPC, Barcelona, Spain. Team: José Rodellar (UPC), Leonardo Acho (UPC), Gisela Pujol (UPC), and Alessandro N. Vargas.
- 3 **Mechatronics:** Development of mechatronic devices that integrated mechanical engineering, electronic engineering, and instrumentation. Intelligent computer control and microprocessors are commonly used. Example: construction of a small-scale shaking table connected to a magnetorheological damper to study vibrations in structures.
- 2 **Agriculture:** Construction of a grain silo prototype with automatic control of temperature. Using this device, the team investigates the mortality assessment of *Rhyzopertha dominica* (F.) (Coleoptera, Bostrichidae), a common pest of stored wheat in Brazil. Team: Irineu Lorini (Embrapa, Brasil), Denis W. F. De Souza (PID Brasil), and Alessandro N. Vargas.
- 1 **Electrical engineering:** Development of analog and digital control strategies to be implemented in some equipments, such as the ones for DC motor devices, level process tanks, electronic circuits, small-size robots, DC-DC converters, processing energy from photovoltaic panels, and so forth.

Educational activities

Tasks

Roles and Responsibilities

- 3 Full-time professor at UTFPR, Brazil.
- 2 Supervisor of students in Electrical Engineering, Control, and Automation (undergraduate and graduate students)
- 1 Experience on teaching courses in Control systems, Nonlinear control, Optimal control, System identification, Stochastic processes, Stochastic control,

Additional information

Reviewer of papers

Reviewer of papers to the following journals: *International Journal of Systems Science* ; *IEEE Transactions on Automatic Control* ; *Optimal Control Applications & Methods* ; *International Journal of Robust and Nonlinear Control* ; *Control Engineering Practice* ; *Automatica (Oxford)* ; *Journal of the Franklin Institute* ; *Circuits, Systems, and Signal Processing* ; *Asian Journal of Control* ; *International Journal of Electrical Power and Energy Systems Engineering* ; *Applied Mathematics and Computation* ; *IEEE Transactions on Cybernetics* ; *Arabian Journal for Science and Engineering. Section B: Engineering* ; *Systems & Control Letters (Print)* ; *International Journal of Control (Print)* ; *IEEE Transactions on Control Systems Technology (Print)* ; *Journal of Vibration and Control* ; *IEEE Transactions on Industry Applications* ; *IEEE Industry Applications Magazine (Print)* ; *Digital Signal Processing (Print)* ; *International Journal of Vehicle Design* ; *IEEE Transactions on Industrial Electronics* ; *International Journal of Control, Automation and Systems* ; *Advances in Mechanical Engineering* ; *International Journal of Adaptive Control and Signal Processing* ; *IEEE TRANSACTIONS ON SYSTEMS, MAN AND CYBERNETICS. PART A.* ; *Proceedings of the Institution of Mechanical Engineers, Part I: Journal of* ; *International Journal of Dynamical Systems and Differential Equations* ; *IFAC Journal of Systems and Control* ; *Entropy* ; *IEEE TRANSACTIONS ON FUZZY SYSTEMS*

Member of editorial board

Associate editor: J. Franklin Inst. (from Dec 2017 up to now).

Associate editor: IET Signal Processing (from Apr 2020 up to now)

Books

Books

1. **Vargas, Alessandro N.**; Costa, Eduardo F. ; João Bosco Ribeiro do Val . *Advances in the Control of Markov Jump Linear Systems with No Mode Observation* [SpringerBriefs in Control, Automation and Robotics]. 42. ed. New York: Springer, 2016. v. 1. 50p .

Journal papers

Journal papers

32. LOPES, R. O. ; MENDES, EDUARDO M. A. M. ; TORRES, L. A. B. ; **Vargas, Alessandro N.** ; PALHARES, R. M. . Finite-horizon suboptimal control of Markov jump linear parameter-varying systems. *INTERNATIONAL JOURNAL OF CONTROL*. DOI:10.1080/00207179.2020.1728387
31. **Vargas, Alessandro N.** ; MONTEZUMA, MARCIO A. F. ; X. Liu ; OLIVEIRA, R. C. L. F. . Robust stability of Markov jump linear systems through randomized evaluations. *APPLIED MATHEMATICS AND COMPUTATION*, v. 346, p. 287-294, 2019.
30. **Vargas, Alessandro N.** ; CARUNTU, C. F. ; ISHIHARA, JOAO Y. . Stability of switching linear systems with switching signals driven by stochastic processes. *JOURNAL OF THE FRANKLIN INSTITUTE-ENGINEERING AND APPLIED MATHEMATICS*, v. 356, p. 31-41, 2019.
29. **Vargas, Alessandro N.** ; Costa, Eduardo F. ; ACHO, L. ; João Bosco Ribeiro do Val. Switching stochastic nonlinear systems with application to an automotive throttle. *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*, v. 63, p. 3098-3104, 2018.
28. **Vargas, Alessandro N.** ; MONTEZUMA, MARCIO A. F. ; LIU, XINGHUA ; XU, LONG ; YU, XINGHUO . Sliding-Mode Control for Stabilizing High-Order Stochastic Systems: Application to One-Degree-of-Freedom Aerial Device. *IEEE Transactions on Systems Man Cybernetics-Systems*, 2018, DOI: 10.1109/TSMC.2018.2849846 .
27. BAHLOUL, M. ; CHRIFI-ALAOUI, L. ; **Vargas, Alessandro N.** ; CHAABANE, M. ; DRID, S. . Online robust estimation of flux and load torque in induction motors. *INTERNATIONAL JOURNAL OF ADVANCED MANUFACTURING TECHNOLOGY*, v. 94, p. 2703-2713, 2018.
26. CAVALCANTI, JOÃO ; FIGUEREDO, LUIS FC ; ISHIHARA, JOÃO Y ; BERNARDES, MARIANA C ; SANTANA, PEDRO HRQA ; **Vargas, Alessandro N.** ; BORGES, GEOVANY A . A real-time web-based networked control system education platform. *INTERNATIONAL JOURNAL OF ELECTRICAL ENGINEERING EDUCATION*, v. 1, p. 1-12, 2018.
25. CARUNTU, C. F. ; **Vargas, Alessandro N.** ; ACHO, LEONARDO ; PUJOL, GISELA . Adaptive-Smith Predictor for Controlling an Automotive Electronic Throttle over Network. *International Journal of Computers Communications & Control*, v. 13, p. 151-161, 2018.

24. TIZGUI, I. ; EL GUEZAR, F. ; BOUZAHIR, H. ; **Vargas, Alessandro N.** . Estimation and Analysis of Wind Electricity Production Cost in Morocco. INTERNATIONAL JOURNAL OF ENERGY ECONOMICS AND POLICY, v. 8, p. 58-66, 2018.
23. CARUNTU, C. F. ; VELANDIA-CARDENAS, C. C. ; LIU, XINGHUA ; **Vargas, Alessandro N.** . Model Predictive Control of Stochastic Linear Systems with Probability Constraints. International Journal of Computers Communications & Control, v. 13, p. 927-937, 2018.
22. SAMPAIO, L. P. ; SILVA, S. A. O. ; **Vargas, Alessandro N.**. Development Of A Graphic Computational Platform Dedicated To Teaching Of Photovoltaic Systems Using An Electronic Emulator. ELETRÔNICA DE POTÊNCIA (IMPRESSO), v. 22, p. 91-101, 2017.
21. YANG, T. ; ZHANG, L. ; SREERAM, V. ; **Vargas, Alessandro N.** ; HAYAT, T. ; AHMAD, B. . Time-varying filter design for semi-Markov jump linear systems with intermittent transmission. INTERNATIONAL JOURNAL OF ROBUST AND NONLINEAR CONTROL, v. 27, p. 4035-4049, 2017.
20. **Vargas, Alessandro N.**; PUJOL, GISELA ; ACHO, LEONARDO . Stability of Markov jump systems with quadratic terms and its application to RLC circuits. JOURNAL OF THE FRANKLIN INSTITUTE-ENGINEERING AND APPLIED MATHEMATICS, v. 354, p. 332-344, 2017.
19. LIU, XINGHUA ; **Vargas, Alessandro N.**; YU, XINGHUO ; XU, LONG . Stabilizing two-dimensional stochastic systems through sliding mode control. JOURNAL OF THE FRANKLIN INSTITUTE-ENGINEERING AND APPLIED MATHEMATICS, v. 354, p. 5813-5824, 2017.
18. **Vargas, Alessandro N.**; Vargas, Alessandro N.; SAMPAIO, LEONARDO P. ; ACHO, LEONARDO ; ZHANG, LIXIAN ; DO VAL, JOAO B. R. . Optimal Control of DC-DC Buck Converter via Linear Systems With Inaccessible Markovian Jumping Modes. IEEE TRANSACTIONS ON CONTROL SYSTEMS TECHNOLOGY, v. 24, p. 1820-1827, 2016.
17. **Vargas, Alessandro N.**; ACHO, L. ; BONIFACIO, E. ; ARENS, W. ; João B. R. do Val. Stochastic stability for a model representing the intake manifold pressure of an automotive engine. Cogent Engineering, v. 3, p. 1-10, 2016.
16. **Vargas, Alessandro N.**; MENEGAZ, HENRIQUE M. T. ; ISHIHARA, JOAO Y. ; ACHO, LEONARDO . Unscented Kalman Filters for Estimating the Position of an Automotive Electronic Throttle Valve. IEEE Trans. on Vehicular Technology, v. 65, p. 4627-4632, 2016.
15. **Vargas, Alessandro N.**; Denis W. F. De Souza, ; FREITAS, A. M. ; LORINI, I. ; João Bosco Ribeiro do Val . A silo for suppressing the population of *Rhyzopertha dominica* (F.) (Coleoptera, Bostrichidae) in stored wheat. Cogent Food & Agriculture, v. 2, p. 1-9, 2016.
14. PODIVOLOVA, E. ; **Vargas, Alessandro N.** ; ACHO, L. . Set-valued estimation of switching linear system: an application to an automotive throttle valve. International Journal of Numerical Modelling , v. 29, p. 755-762, 2016.
13. PUJOL, G. ; VIDAL, Y. ; ACHO, L. ; **Vargas, Alessandro N.**. Asymmetric Modelling and Control of an Electronic Throttle. International Journal of Numerical Modelling: Electronic Networks, Devices and Fields, Volume 29, Issue 2, p. 192–204. 2016
12. **Vargas, Alessandro N.** ; ACHO, L. ; PUJOL, G. ; COSTA, E. F. ; ISHIHARA, JOÃO Y. ; João Bosco Ribeiro do Val . Output feedback of Markov jump linear systems with no mode observation: an automotive throttle application. International Journal of Robust and Nonlinear Control. Volume 26, Issue 9, p. 1980–1993. 2016.
11. **Vargas, Alessandro N.** ; BORTOLIN, D. C. ; Costa, Eduardo F. ; João Bosco Ribeiro do Val . Gradient-based optimization techniques for the design of static controllers for Markov jump linear systems with unobservable modes. International Journal of Numerical Modelling: Electronic Networks, Devices and Fields, 2015. Volume 28, Issue 3, pages 239–253.
10. MENEGAZ, H. M. ; Ishihara, J. Y. ; BORGES, G. A. ; **Vargas, Alessandro N.** . Systematization of the Unscented Kalman Filter Theory. IEEE Transactions on Automatic Control, 2015. Volume:60 Issue:10, 2583–2598.
9. OLIVEIRA, RICARDO C. L. F. ; **Vargas, Alessandro N.** ; DO VAL, JOAO B. R. ; PERES, PEDRO L. D. . Mode-Independent H_2 -Control of a DC Motor Modeled as a Markov Jump Linear System. IEEE Transactions on Control Systems Technology. 2014. Volume:22 , Issue: 5, 1915–1919.
8. **Vargas, Alessandro N.** ; João Bosco Ribeiro do Val Almost Periodic Parameters for the Second Moment Stability of Linear Stochastic Systems. IEEE Transactions on Automatic Control, v. 59, p. 1072-1077, 2014
7. **Vargas, Alessandro N.** ; João Bosco Ribeiro do Val ; Ishihara, J. Y. Stationary policies for lower bounds on the minimum average cost of discrete-time nonlinear control systems. International Journal of Robust and Nonlinear Control, 2014, Volume 24, Issue 17, pages 2943–2957.
6. **Vargas, Alessandro N.** ; Costa, Eduardo F. ; João Bosco Ribeiro do Val. On the control of Markov jump linear systems with no mode observation: application to a DC Motor device. International Journal of Robust and Nonlinear Control, Volume 23, Issue 10, pages 1136-1150, 2013

5. **Vargas, Alessandro N.** ; FURLONI, Walter ; Val, João B.R. . Second moment constraints and the control problem of Markov jump linear systems. Numerical Linear Algebra with Applications, Volume 20, Issue 2, pages 357-368, March 2013
4. Costa, Eduardo F. ; **Vargas, Alessandro N.** ; Val, João B. R. . Quadratic costs and second moments of jump linear systems with general Markov chain. MCSS. Mathematics of Control, Signals and Systems, v. 23, p. 141-157, 2011.
3. **Vargas, Alessandro N.** ; do Val, João B. R.; Average Cost and Stability of Time-Varying Linear Systems. IEEE Transactions on Automatic Control , v. 55, p. 714-720, 2010.
2. OLIVEIRA, R. C. L. F. ; **Vargas, Alessandro N.** ; do Val, J.B.R. ; PERES, P. L. D. . Robust stability, H2 analysis and stabilisation of discrete-time Markov jump linear systems with uncertain probability matrix. International Journal of Control, v. 82, p. 470-481, 2009.
1. **Vargas, Alessandro N.** ; do VAL, J. B. R. ; COSTA, E. F. . Controle de horizonte retrocedente de sistemas lineares com saltos Markovianos para o problema de rastreamento com alvos dinâmicos. Controle & Automação (Impresso), v. 16, p. 435-448, 2006.

Conference papers

Conference papers

35. BAHLOUL, M. ; **Vargas, Alessandro N.** ; CHRIFI-ALAOUI, L. ; DRID, S. ; CHAABANE, M. . Modified Robust Model Reference Adaptive System Scheme for a Speed Sensorless Vector Control of Induction Motor. In: Proc. 19th international conference on Sciences and Techniques of Automatic control & computer engineering (STA), Sousse, Tunis, 2019. v. 1. p. 473-478.
34. CARUNTU, C. F. ; LAZAR, C. ; **Vargas, Alessandro N.** . Chance-constrained model predictive control for vehicle drivetrains in a cyber-physical framework. In: Engineering, Technology and Innovation (ICE/ITMC), 2017 International Conference on, Ilha da Madeira Portugal, 2017, v. 1. p. 1137-1144.
33. **Vargas, Alessandro N.** ; PUJOL, G. ; ACHO, L. ; João Bosco Ribeiro do Val . On the stability in probability of Markov jump systems with quadratic terms. In: European Control Conference ECC, 2015, Linz, Austria. Proc. European Control Conference, v. 1. p. 770-775, 2015.
32. **Vargas, Alessandro N.** ; ACHO, L. ; PUJOL, G. ; OLIVEIRA, R. C. L. F. ; Val, João B. R. ; PERES, P. L. D. . Robust H-2 static output feedback to control an automotive throttle valve. In: 2014 American Control Conference, 2014, Portland, Oregon, USA. Proc. 2014 American Control Conference, 2014.
31. LEVANO, E. ; **Vargas, Alessandro N.** . Control of a hysteresis model subject to random failures. In: 11th Portuguese Conference on Automatic Control, 2014, Porto, Portugal. Springer Lecture Notes in Electrical Engineering - Proc. 11th Portuguese Conf. Automatic Control. New York: Springer, 2014. v. 321. p. 1-10.
30. FREIRE JUNIOR, V. A. ; **Vargas, Alessandro N.** ; AGULHARI, C. M. . ON THE DESIGN OF A QUANTIZED STATE-FEEDBACK CONTROL. In: XX Congresso Brasileiro de Automática, 2014, Belo Horizonte. XX Congresso Brasileiro de Automática, 2014. p. 1150-1157.
29. PELZ, G. M. ; BRONIERA JUNIOR, P. ; **Vargas, Alessandro N.** . Implementação de um sistema de controle de nível de dois tanques acoplados. In: XX Congresso Brasileiro de Automática, 2014, Belo Horizonte. XX Congresso Brasileiro de Automática, 2014. p. 1419-1425.
28. De Souza D. W. F., **Vargas, Alessandro N.**, Do Val J. B. R., Freitas A. M., I. Lorini, Control of Temperature to Suppress the Population of Rhyzopertha Dominica (F.) (Coleoptera, Bostrichidae) in a Grain Silo Prototype, Proc. European Control Conference 2013, Zurich. 2013. p. 4089-4093
27. **Vargas, Alessandro N.** ; do VAL, J. B. R., Ishihara, J. Y. . On the Numerical Solution of the Control Problem of Switched Linear Systems, Proc. European Control Conference 2013, Zurich. 2013. p. 2175-2179.
26. **Vargas, Alessandro N.** ; do VAL, J. B. R. . Asymptotic stability of linear stochastic systems with delay driven by a Bernoulli process. In: 10th Portuguese Conference on Automatic Control CONTROLO 12, 2012, Funchal, Ilha da Madeira. Lisboa: Associação Portuguesa de Controlo Automatico (APCA), 2012. p. 157-161.
25. **Vargas, Alessandro N.** ; João Bosco Ribeiro do Val. SISTEMAS LINEARES ESTOCASTICOS COM ATRASO GOVERNADO POR PROCESSO DE BERNOULLI. In: Congresso Brasileiro de Automática - CBA 2012, 2012, Campina Grande, Paraiba. p. 5088-5093.
24. **Vargas, Alessandro N.** ; VAL, J. B. R. . Finite approximation of the optimal average cost for a class of stochastic control systems. In: 18th IFAC World Congress, 2011, Milan, Italy. Proc. 18th IFAC World Congress, 2011. p. 12427-12431.

23. **Vargas, Alessandro N.** ; do VAL, J. B. R. . Stationary policies for the second moment stability in a class of stochastic systems. In: 50th IEEE Conference on Decision and Control and European Control Conference, 2011, Orlando, Florida, USA. Proc. 50th IEEE Conference on Decision and Control and European Control Conference, 2011. p. 1264-1268.
22. **Vargas, Alessandro N.** ; João Bosco Ribeiro do Val . Minimum second moment state for the existence of average optimal stationary policies in linear stochastic systems. In: 2010 American Control Conference, 2010, Baltimore, Mariland, USA. Proc. 2010 American Control Conference, 2010. p. 373-377.
21. **Vargas, Alessandro N.** ; Ishihara, J. Y. ; João Bosco Ribeiro do Val . Regulador linear quadrático de sistemas lineares com saltos markovianos e controle nos chaveamentos. In: XVIII Congresso Brasileiro de Automática, 2010, Bonito, MS. Proc. XVIII Congresso Brasileiro de Automática, 2010. p. 4701-4705.
20. Furloni, W. ; João Bosco Ribeiro do Val ; **Vargas, Alessandro N.** . Controle sujeito a restrições de sistemas lineares com saltos markovianos e ruído multiplicativo. In: XVIII Congresso Brasileiro de Automática, 2010, Bonito, MS. Proc. XVIII Congresso Brasileiro de Automática, 2010. p. 2910-2917.
19. **Vargas, Alessandro N.** ; Ishihara, J. Y. ; João Bosco Ribeiro do Val . Linear quadratic regulator for a class of Markovian jump systems with control in jumps. In: 49th IEEE Conference on Decision and Control, 2010, Atlanta, USA. Proc. 49th IEEE Conference on Decision and Control, 2010. p. 2282-2285.
18. **Vargas, Alessandro N.** ; João Bosco Ribeiro do Val . A Controllability Condition for the Existence of Average Optimal Stationary Policies of Linear Stochastic Systems. In: The European Control Conference, 2009, Budapest, Hungary. Proc. European Control Conference, 2009. p. 32-37.
17. **Vargas, Alessandro N.** ; João Bosco Ribeiro do Val . A Bounded Cost Condition for the Existence of Average Optimal Stationary Policies of Linear Stochastic Systems. In: The European Control Conference, 2009, Budapest, Hungary. Proc. European Control Conference, 2009. p. 38-42.
16. **Vargas, Alessandro N.** ; do VAL, J. B. R. . Average optimal stationary policies: convexity and convergence conditions in linear stochastic control systems. In: Joint 48th IEEE Conference on Decision and Control and 28th Chinese Control Conference, 2009, Shangai, China. Proc. 48th IEEE Conference on Decision and Control, 2009. p. 3388-3393.
15. **Vargas, Alessandro N.** ; João Bosco Ribeiro do Val . A result on the existence of optimal stationary policies for the average cost control problem of linear systems. In: XVII Congresso Brasileiro de Automática, 2008, Juiz de Fora-MG. XVII Congresso Brasileiro de Automática, 2008.
14. **Vargas, Alessandro N.** ; do VAL, J. B. R. . On the existence of stationary optimal policies for the average cost control problem of linear systems with abstract state-feedback. In: 47th IEEE Conference on Decision and Control, 2008, Cancun, Mexico. Proc. 47th IEEE Conference on Decision and Control, 2008. p. 3682-3687.
13. **Vargas, Alessandro N.** ; João Bosco Ribeiro do Val . Averaging and Stability of Time-Varying Discrete-Time Linear Systems. In: 17th IFAC World Congress, 2008, Seoul. Proceedings of the 17th IFAC World Congress, 2008. p. 1305-1310.
12. **Vargas, Alessandro N.** ; do VAL, J. B. R. ; COSTA, E. F. . On stability of linear time-varying stochastic discrete-time systems. In: European Control Conference, 2007, Kos, Grecia. European Control Conference 2007, 2007. p. 2423-2427.
11. OLIVEIRA, R. C. L. F. ; **Vargas, Alessandro N.** ; do VAL, J. B. R. ; PERES, P. L. D. . Convergent LMI relaxations for robust analysis of uncertain discrete-time Markov jump linear systems. In: 3rd IFAC Symposium on System, Structure and Control, 2007, Foz do Iguacu, PR. Proceedings of the 3rd IFAC Symposium on System, Structure and Control, 2007.
10. **Vargas, Alessandro N.** ; Furloni, W. ; do VAL, J. B. R. . Control of Markov Jump Linear Systems with state and input constraints: a necessary optimality condition. In: 3rd IFAC Symposium on System, Structure and Control, 2007, Foz do Iguacu, PR. Proceedings of the 3rd IFAC Symposium on System, Structure and Control, 2007.
9. **Vargas, Alessandro N.** ; do VAL, J. B. R. ; FURLONI, Walter . Constrained Control Problem of Discrete-time Markov Jump Linear Systems with Observed State. In: CBA 2006, XVI Congresso Brasileiro de Automatica, 2006, Salvador, Bahia. CBA 2006, XVI Congresso Brasileiro de Automatica, 2006. p. 2063-2068.
8. **Vargas, Alessandro N.** ; COSTA, E. F. ; do VAL, J. B. R. . Bounds for the Finite Horizon Cost of Linear Systems with Additive Noise and Convergence for the Long Run Average Cost. In: CBA 2006, XVI Congresso Brasileiro de Automatica, 2006, Salvador, Bahia. CBA 2006, XVI Congresso Brasileiro de Automatica, 2006. p. 2153-2158.

7. **Vargas, Alessandro N.** ; FURLONI, Walter ; do VAL, J. B. R. . Constrained Model Predictive Control of Jump Linear Systems with Noise and Non-observed Markov State. In: 2006 American Control Conference, 2006, Minneapolis, USA. 2006 American Control Conference, 2006. p. 929-934.
6. **Vargas, Alessandro N.** ; COSTA, E. F. ; do VAL, J. B. R. . Bounds for the Finite Horizon Cost of Markov Jump Linear Systems with Additive Noise and Convergence for the Long Run Average Cost. In: Proc. 45th IEEE Conference on Decision and Control, 2006, San Diego, CA, USA. Proc. 45th IEEE Conference on Decision and Control, 2006. p. 5543-5548.
5. FURLONI, Walter ; **Vargas, Alessandro N.** ; do VAL, J. B. R. . Aplicação de Controle por Horizonte Retrocedente de Sistemas Lineares com Saltos Markovianos à Regulação de Tráfego Metroviário. In: CBA 2006, XVI Congresso Brasileiro de Automatica, 2006, Salvador, Bahia. CBA 2006, XVI Congresso Brasileiro de Automatica, 2006. p. 2784-2789.
4. **Vargas, Alessandro N.** ; do VAL, J. B. R. ; COSTA, E. F. . Optimality Condition for the Receding Horizon Control of Markov Jump Linear Systems with Non-observed Chain and Linear Feedback Controls. In: 44th IEEE Conference on Decision and Control and European Control Conference ECC 2005, 2005, Seville, Spain. Proc. 44th IEEE Conference on Decision and Control and European Control Conference ECC 2005, 2005. p. 7308-7313.
3. **Vargas, Alessandro N.** ; do VAL, J. B. R. ; COSTA, E. F. . Receding Horizon Control of Markov Jump Linear Systems Subject to Noise and Unobserved State Chain. In: 43rd IEEE Conference on Decision and Control, 2004, Paradise Island. Proc. 43rd IEEE Conference on Decision and Control, 2004. v. 4. p. 4381-4386.
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Research interests

- Stochastic systems - stability and control;
- Stochastic differential equations;
- Markov systems, Markov decision processes;
- Hybrid systems - control and stability of systems subject to jumps;
- Robust and optimal control;
- Mathematical methods;
- Mechatronics;
- Actuators and sensors in Mechatronics;
- Automotive systems;
- Integration of mechanisms and electronics in smart devices.