Prof. Giuseppe De Nicolao

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VITAE

Biosketch

Giuseppe De Nicolao is Full Professor at the University of Pavia, Italy, Department of Computer and System Science, since 2000. He graduated (cum laude) from the Polytechnic of Milano in 1986. His thesis won the annual Quazza Award for the best thesis in Automatic Control defended at the Politecnico di Milano. From 1987 to 1988 he was with the Biomathematics and Biostatistics Unit of the Institute of Pharmacological Researches "Mario Negri", Milano. In 1988 he was appointed a position as a researcher at the Center for System Theory in Milano of the Italian National Research Council. In 1991, he held a visiting fellowship at the Department of Systems Engineering of the Australian National University, Canberra (Australia). In 1992 he joined the Department of Computer and System Science of the University of Pavia as Associate Professor (Full Professor since 2000) of Model Identification and Data Analysis. He has been contributing to Control Theory and System Identification mostly in the areas of Filtering, Periodic Systems, Model Predictive Control, Bayesian Learning, Modelling Identification and Control of Biomedical Systems, Statistical Process Control applied to Semiconductor Manufacturing. On these subjects he has published more than 100 journal papers. He is a Senior Member of the IEEE since 1997. From 1999 to 2001 he served the editorial board of the IEEE Transactions on Automatic Control and from 2007 to 2010 the Editorial Board of Automatica. He has been member of the International Program Committees of several international conferences including six editions of the IEEE Conference on Decision and Control. He has been involved in several projects funded by state agencies and has coordinated industrial research projects funded by Foxboro, Magneti Marelli, STMicroelectronics, Numonyx, Infineon, Pharmacia, Nerviano Medical Sciences, GlaxoSmithKline, Janssen, and Italfarmaco. He is Team Leader of the Pavia Unit in the European Union JU ENIAC Project "IMPROVE" (Implementing Manufacturing science solutions to increase equiPment pROductiVity and fab pErformance). He is coinventor of 4 international patents on methods for the analysys of pharmacokinetic/pharmacodynamic data and for the artificial pancreas.

Current Position

Full Professor of Model Identification and Data Analysis

Appointments

1987-88:	Visiting Scientist, Institute of Pharmacological Researches, "Mario Negri", Milano.
1988-92:	Research Scientist, Center for System Theory, Italian National Research Council (C.N.R.), Milano.
1991:	Visiting Fellow, Australian National University, Canberra, Australia.
1991-92:	Visiting Professor, University of Padova.
1992-2000:	Associate Professor, University of Pavia.
2000-today:	Full Professor, University of Pavia.

Research Activities

- *Bayesian Learning:* Efficient computation of regularization networks, consistency properties of regularization networks, regularization networks for inverse problems, active learning for optimal experiment design.
- *Estimation of hormone secretion by deconvolution:* Coinvestigator in the NIH Project "Input estimation of biological systems by deconvolution", 1997-99 (principal investigator: Prof. C. Cobelli, University of Padova); Co-chairman of the workshop "Mathematical Methods and Models in the Investigation of Hormonal Secretory Processes", 1997. Milano; more than 10 journal papers appeared in Automatica, IEEE Tr. on Biomedical Eng.,

Annals of Biomed. Eng., Clinical Endocrinolocy, Europ. J. of Endocrinology, Comp. Progr. & Meth. in Biomed. Eng..

- *Mathematical models of tumor growth inhibition:* projects on computational methods and models for the preclinical development of antitumor drugs funded by the Nerviano Labs of Pharmacia, 2 international patents; several papers in qualified journals including Cancer Research, Journal of Pharmacokin. and Pharmacodyn., Math. Biosciences, IEEE Trans. on Biomedical Engineering.
- *Filtering:* Convergence properties of the time-varying Riccati equation of optimal filtering, guaranteed-cost and H-infinity robust filters, convergence analysis of optimal and robust filters.
- *Periodic systems:* Necessary and sufficient conditions for the solvability of the discrete-time periodic Linear Quadratic Gaussian Problem, spectral factorization of cyclostationary processes, multirate sampled data systems.
- *Model Predictive Control:* Stability analysis of linear receding horizon control via fake Riccati equations, stabilizing nonlinear predictive control, H-infinity nonlinear predictive control.
- *Process diagnosis and data analysis in semiconductor manufacturing:* industrial research project on automatic diagnosis methods funded by STMicroelectronics (2003-today); supervisor of the PhD Thesis winning the 2006 Doctoral Thesis Award of the *IEEE Test Technology Technical Council*. Team Leader of the Pavia Unit in the European Union JU ENIAC Project "IMPROVE" (*Implementing Manufacturing science solutions to increase equiPment pROductiVity and fab pErformance*).
- *Model Predictive Control:* Stability analysis of linear receding horizon control via fake Riccati equations, stabilizing nonlinear predictive control, H-infinity nonlinear predictive control.
- Closed-loop Glucose Control for the Artificial Pancreas: Modular architecture of the artificial pancreas, *in silico* based tuning of Model Predictive Control to be used in *in vivo* trials, collaboration to international research projects funded by the European Union (AP@HOME: Artificial Pancreas at Home) and Juvenile Diabetes Research Foundation (USA), 2 international patents.

Funded Research

- Research Grants from Italian Ministry of University and Research, Pharmacia, Nerviano Medical Sciences, GlaxoSmithKline, STMicrolectronics, Numonyx, Infineon, Foxboro, Magneti Marelli, Janssen.

Recent Grants:

- EU ECSEL JU SemI40 - "Power Semiconductor and Electronics Manufacturing 4.0" (2016-2019)
- EU ENIAC JU IMPROVE - "Implementing Manufacturing science solutions to increase equiPment pROductiVity and fab pErformance" (2009-2012)
- EU ENIAC JU INTEGRATE - "Integrated Solutions for Agile Manufacturing in High-mix Semiconductor Fabs" (2013-2015)
- GlaxoSmithKline 2009, "Development of Bayesian approaches to be applied to clinical studies"
- GlaxoSmithKline 2010-2012, "Integrated response and dropout modelling for clinical utility evaluation"
- GlaxoSmithKline 2012-2013, "Integrated target mediated PK/PD models for lymphocyte binding monoclonal antibodies"
- GlaxoSmithKline 2013, "(Extension of) Integrated response and dropout modelling for clinical utility evaluation"
- GlaxoSmithKline 2014, "Integrated target-mediated drug disposition binding kinetics into physiologically-based pharmacokinetic model for monoclonal antibodies"

  Infineon 2010-2011 "iMetreo: Development and implementation of an "automated virtual metrology system"
- Infineon 2012, "Enhancement of a Software called Roome"
- Italfarmaco 2012, "PK/PD Analysis of the effects of ITF2984 on GH, ACTH, cortisol, insulin, glucagon, and plasma glucose"
- Italfarmaco 2014, "Effect of Givinostat on distributions of CSA and prediction of post-treatment MFAF% in Italfarmaco study n. DSC/11/2357/43"
- Italfarmaco 2016, "Modelling of Progesterone in vitro data release and in vivo plasma concentration from ITFE-20168 Progesterone vaginal rings"

- Janssen 2012. “Semi-physiological PK model accounting for the residence and the transit of the lipids from the meal in the Gi tract”
- Janssen 2012, “PKPD modelling of an Anticancer agent”
- Janssen 2013, “Xenograft and biomarker modelling”

Patents

- Bellazzi Riccardo, De Nicolao Giuseppe, Magni Paolo, Poggesi Italo, Rocchetti Maurizio, “Method to evaluate the systemic exposure in toxicological and pharmacological studies”, Pharmacia Italia Oct, 11 2001: WO 2001/075639; Jan, 2 2003: EP1269390; US20030149248.
- Cristiano Cammia, Giuseppe DeNicolao, Italo Poggesi, Maurizio Rocchetti, “Method for estimating or predicting the anti-tumor activity of a compound and for estimating or predicting the tumor growth in mammals”, Pharmacia Italia Sep, 25 2003: WO 2003/079004; Feb, 16 2005: EP1506515; Jun, 30 2005: US 20050143927.
- L. Magni, G. De Nicolao, D.M. Raimondo, C. Cobelli, C. Dalla Man, “Predictive control based system and method for control od insulin delivery in diabetes using glucose sensing”, published 2010/10/14, University of Virginia Patent Foundation May, 7 2009: WO 2009/059187; US 2010/0262117.
- B. Kovatchev, G. De Nicolao, L. Magni, C. Dalla Man, C. Cobelli, “System, Method and Computer Program Product for Adjustment of Insulin Delivery in Diabetes Using Nominal Open-Loop Profiles “, University of Virginia Patent Foundation Mar, 10 2011: WO 2011/028731; Università degli Studi di Padova, May, 5 2011: WO 2011/051922; University of Virginia Patent Foundation Jul, 4 2012: EP2470256.
- C. Cobelli, G. De Nicolao, A. Facchinetti, S. Guerra, G. Sparacino, “Method to recalibrate continuous glucose monitoring data on-line”, Università degli Studi di Padova, May, 5 2011: WO 2011/051922.

Plenary and Invited Lectures

- Keynote Lecture, "Stability and robustness of nonlinear receding-horizon control", workshop *Nonlinear model predictive control: Assessment and future directions for research*, Ascona, Switzerland, June 3-5 1998.
- Tutorial Lecture, "System identification: Problems and perspectives", *12th Workshop on Qualitative Reasoning*, Cortona, June 3-6, 1997.
- Invited Lecture, "Nonparametric deconvolution in physiological systems: a stochastic approach", opening lecture of the Session *Deconvolution and Modeling of Kinetic Systems, IFAC Symposium on Modeling and Control of Biomedical Systems*, Galveston, Texas, USA, March 27-30, 1994.
- Invited Lecture, "Robustness and performance in adaptive filtering", workshop *Robustness in Identification and Control*, Siena, July 30-August 2, 1998. Among the participants: R.E. Kalman, L. Ljung, P.V. Kokotovic, J.C. Doyle, M. Morari, M.R. Gevers, V. Kucera, V. Kharitonov, J. Ackermann.
- Invited Lecturer, Panel Discussion, International Workshop on *Computers in Endocrinology* , Milano, May 7-10, 1990.
- Invited Lecture, "Estimation using deconvolution of hormone secretion and substrate production”, *17th Annual School of the National Biomedical Engineering Group*, Bressanone, September 28-October 1, 1998.
- Invited Seminar, "Nonparametric identification of pharmacokinetic population models via Gaussian processes", March 10, 2006, *Joint Control/Engineering for the Life Sciences Seminar*, Department of Engineering, University of Cambridge, UK.

Journal and Conference Activity

- Associate Editor, *IEEE Transactions on Control Systems Technology* (2012-2013).
- Associate Editor, *Automatica* (2007-2010).
- Associate Editor, *IEEE Transactions on Automatic Control* (1999-2002).
- IPC Member, *51st IEEE Conf. on Decision and Control*, December 2012, Hawaii, USA.
- Area Editor, *48th IEEE Conf. on Decision and Control*, December 2009, Shanghai, China.

- Area Editor, *47th IEEE Conf. on Decision and Control*, December 2008, Cancun, Mexico.
- Area Editor, *44th IEEE CDC-ECC*, December 2005, Sevilla, Spain.
- IPC (International Program Committee) member, *IFAC Workshop on Periodic Control Systems (PSYCO 2004),* August-September 2004, Yokohama, Japan.
- IPC member, *43nd IEEE Conf. on Decision and Control*, December 2004, Atlantis, Paradise Island, Bahamas.
- IPC member, *42nd IEEE Conf. on Decision and Control*, December 2003, Mahui, Hawaii.
- IPC member, *40th IEEE Conf. on Decision and Control*, December 2001, Orlando, Florida.
- IPC member, *4th European Control Conference*, July 1997, Bruxelles, Belgium.
- Member of the Program Committee (2009), *ECOBIOSYS: Classification and Forecasting Models*, organized by ANIPLA (Associazione Nazionale Italiana per l'Automazione).
- Member of the Program Committee (1998, 2001, 2005), *BIOSYS: Sanità e Sistemi Medicali: Automazione ed Informatizzazione*, organized by ANIPLA (Associazione Nazionale Italiana per l'Automazione).
- Co-chairman, Workshop on *Mathematical Methods and Models in the Investigation of Hormonal Secretory Processes*, Istituto Auxologico Italiano, Milano, February 21, 1997.
- Member of the Organizing Committee, *21st PAGE (Population Approach Group Europe) Meeting*, Venezia, June 6-8, 2012.
- Member of the Organizing Committee, *Workshop on the Riccati Equation*, Como, June 1989, co-sponsored by IEEE-Control Systems Society, IFAC, and SIAM.

Publication list (Journals)

[A1] S. Bittanti, P. Colaneri, G. De Nicolao, "Discrete–time linear periodic systems: A note on the reachability and controllability interval length", *Systems & Control Letters*, vol. 8, pp. 75–78, 1986.

[A2] S. Bittanti, P. Colaneri, G. De Nicolao, "The difference periodic Riccati equation for the periodic prediction problem", *IEEE Trans. on Automatic Control*, vol. AC-33, pp. 706-712, 1988.

[A3] V. Guardabasso, G. De Nicolao, M. Rocchetti, D. Rodbard, "Evaluation of pulse-detection algorithms by computer simulation of hormone secretion", *Am. J. Physiol.*, vol. 255 (Endocrinol.Metab. 18), pp. E775-E774, 1988.

[A4] G. De Nicolao, M. Rocchetti, "Mean plasma hormone concentration is controlled in a linear manner by secretory impulse frequency", *Am. J. Physiol.*, vol. 257 (Endocrinol.Metab.18), pp. E299, 1989.

[A5] S. Bittanti, P. Colaneri, G. De Nicolao, "A note on the maximal solution of the periodic Riccati equation", *IEEE Trans. on Automatic Control*, vol. AC-34, pp. 1316-1319, 1989.

[A6] S. Bittanti, P. Colaneri, G. De Nicolao, "An algebraic Riccati equation for the discrete-time periodic prediction problem", *Systems & Control Letters*, vol. 14, pp. 71-78, 1990.

[A7] G. De Nicolao, "On a fallacious conjecture about the stabilizability properties of solutions of the Riccati difference equation," *Systems & Control Letters*, vol. 14, pp. 409-410, 1990.

[A8] G. De Nicolao, V. Guardabasso, M. Rocchetti, "The relationship between rate of venous sampling and visible frequency of hormone pulses", *Computer Meth. Programs Biomed.*, vol. 33, pp. 145-157, 1990.

[A9] M. Rocchetti, G. De Nicolao, "CURT: A randomization test for statistical comparison between experimental curves", *Computer Meth. Programs Biomed.*, vol. 31, pp. 207-213, 1990.

[A10] A. Sartorio, A. Spada, M. Arosio, A. Conti, G. Faglia, G. De Nicolao, "Effects of consecutive doses of GHRH on GH secretion," *Clinical Endocrinology*, vol. 35, pp. 187-188, 1991.

[A11] G. De Nicolao, "On the time-varying Riccati difference equation of optimal filtering," *SIAM. J. Control Opt.,* vol. 30, pp. 1251-1269, 1992.

[A12 G. De Nicolao, M. Gevers, "Difference and differential Riccati equations: A note on the convergence to the strong solution," *IEEE Trans. on Automatic Control*, vol. AC-37 pp. 1055-1057, 1992.

[A13] S. Bittanti, P. Bolzern, G. De Nicolao, "Comments on 'Stabilizability and detectability of discrete-time time-varying systems," *IEEE Trans. on Automatic Control*, vol. AC-37 pp. 1274-1275, 1992.

[A14] G. De Nicolao, "Cyclomonotonicity and stabilizability properties of solutions of the difference periodic Riccati equation," *IEEE Trans. on Automatic Control*, vol. AC-37, pp.1405-1410, 1992.

[A15] G. De Nicolao, "On the convergence to the strong solution of periodic Riccati equations," *Int. J. Control*, vol. 56, pp. 87-97, 1992.

[A16] G. De Nicolao, "Differential periodic Riccati equations: A note on the existence of an infinite number of periodic strong solutions," *Int. J. Control*, vol. 56, pp. 985-990, 1992.

[A17] S. Bittanti, G. De Nicolao, "Spectral factorization of linear periodic systems with application to the optimal prediction of periodic ARMA models," *Automatica*, vol. 29, pp. 517-522, 1993.

[A18] G. De Nicolao, A. Locatelli, "On the utopian approach to the multiobjective LQ problem," *Optimal Control Appl. and Methods*, vol. 14, pp. 111-124, 1993.

[A19] G. De Nicolao, D. Liberati, "Linear and nonlinear techniques for the deconvolution of hormone time-series," *IEEE Trans. on Biomed. Eng.*, vol. BME-40, pp. 440-455, 1993.

[A20] G. De Nicolao, F. Lorito, S.Strada, "On 'Comparison and Extensions of Control Methods for Narrow-Band Disturbance Rejection'," *IEEE Trans. on Speech and Audio Processing*, vol. SAP-2, pp. 459-461, 1994.

[A21] P. Bolzern, P. Colaneri, G. De Nicolao, "On the computation of upper covariance bounds for perturbed linear systems," *IEEE Trans. on Automatic Control*, vol. AC-39, pp. 623-626, 1994.

[A22] S. Bittanti, G. De Nicolao, "Review of the book: 'The Autonomous Linear Quadratic Control Problem: Theory and Numerical Solutions'," *Automatica*, vol. 30, pp. 555-556, 1994.

[A23] P. Bolzern, P. Colaneri, G. De Nicolao, "Covariance bounds for discrete-time linear systems with parameter uncertainty," *Int. J. Control*, vol. 60, pp. 1307-1317, 1994.

[A24] G. De Nicolao, "Cyclomonotonicity, Riccati equations, and periodic receding horizon control," *Automatica*, vol. 30, pp. 1375-1388, 1994.

[A25] P. Colaneri, G. De Nicolao, "Multirate LQG control of continuous-time stochastic systems", *Automatica*, vol. 31, pp. 591-596, 1995.

[A26] P. Bolzern, P. Colaneri, G. De Nicolao, "Optimal design of robust predictors for linear discrete-time systems," *Sys. & Control Letters*, 1995, 26 (1995) 25-31.

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[A29] R. Bellazzi, C. Siviero, G. De Nicolao, M. Stefanelli, "Adaptive controllers for intelligent monitoring", *Artificial Intelligence in Medicine*, 7 (1995) 515-540.

[A30] G. De Nicolao, L. Magni, R. Scattolini, "On the robustness of receding-horizon control with terminal constraints," *IEEE Trans. on Automatic Control*, AC-41 (1996) 451-453.

[A31] P. Bolzern, P. Colaneri, G. De Nicolao, "Optimal robust filtering with time-varying parameter uncertainty," *Int. J. Control*, 63 (1996), 557-576.

[A32] G. De Nicolao, R. Scattolini, G. Sala, "An adaptive predictive regulator with input saturations," *Automatica* , 32 (1996) 597-601.

[A33] G. De Nicolao, R. Scattolini, C. Siviero "Modelling the volumetric efficiency of IC engines: Parametric, non-parametric and neural techniques," *Control Eng. Practice* , 4 (1996) 1405-1415.

[A34] G. De Nicolao, L. Magni, R. Scattolini, "Robust predictive control of systems with uncertain impulse response", *Automatica* , 32 (1996) 1475-1479.

[A35] G. De Nicolao, S. Strada, "On the stability of receding-horizon LQ control with zero-state terminal constraint", *IEEE Trans. on Automatic Control*, AC-42 (1997) 257-260.

[A36] P. Bolzern, P. Colaneri, G. De Nicolao, "H_∞ differential Riccati equations: convergence properties and finite escape phenomena," *IEEE Trans. on Automatic Control*, AC-42 (1997) 113-118.

[A37] P. Bolzern, P. Colaneri, G. De Nicolao, "Finite escapes and convergence properties of guaranteed-cost robust filters," *Automatica,* 33 (1997) 31-47.

[A38] G. De Nicolao, G. Sparacino, C. Cobelli "Nonparametric input estimation in physiological systems: Problems, methods, case studies," *Automatica,* 33 (1997) 851-870.

[A39] G. De Nicolao, S. Strada, "On the use of reachability gramians for the stabilization of linear periodic systems", *Automatica,* 33 (1997) 729-732.

[A40] A. Sartorio, G. De Nicolao, G. Pizzini, D. Liberati, "Nonparametric deconvolution provides an objective assessment of GH responsiveness to GH releasing stimuli in normal subjects," *Clin. Endocrinology*, 46 (1997) 387-400.

[A41] G. De Nicolao, L. Magni, R. Scattolini, "Stabilizing predictive control of nonlinear ARX models", *Automatica*, 33 (1997) 1691-1697.

[A42] R. Bellazzi, P. Magni, G. De Nicolao, "Dynamic probabilistic networks for modelling and identifying dynamics systems", *Intelligent Data Analysis Journal*, 1 (1997) 245-262.

[A43] G. De Nicolao, G. Ferrari Trecate "On the zeros of discrete-time linear periodic systems", *Circuits, Systems, Signal Processing,* 16 (1997) 703-718.

[A44] P. Bolzern, P. Colaneri, G. De Nicolao, "Transient and asymptotic analysis of discrete-time H_∞ filters," *Europ. J. Control,* 3 (1997) 317-324.

[A45] G. De Nicolao, L. Magni, R. Scattolini, "Stabilizing receding-horizon control of nonlinear time-varying systems", *IEEE Trans. on Automatic Control*, AC-43 (1998) 1030-1036.

[A46] G. De Nicolao, S. Strada, "Kalman filtering with mixed discrete-continuous observations", *Int. J. Control* , 70 (1998) 71-84.

[A47] G. De Nicolao, S. Pinzoni, G. Ferrari Trecate, "Zeros of continuous-time linear periodic systems", *Automatica,* 34 (1998) 1651-1655.

[A48] P. Magni, R. Bellazzi, G. De Nicolao, "Bayesian function learning using MCMC methods", *IEEE Trans. on Pattern Analysis and Machine Intelligence*, PAMI-20 (1998) 1319-1331.

[A49] G. De Nicolao, "Discussion on the paper 'Discrete time Riccati equations in open loop Nash and Stackleberg games' by G. Freiling, G. Jank, and H. Abou Kandil," *Europ. J. of Control*, 5 (1999) 67-69.

[A50] G. De Nicolao, G. Ferrari Trecate, "On the Wold decomposition of discrete-time cyclostationary processes", *IEEE Trans. on Signal Processing,* 47 (1999) 2041-2043.

[A51] G. De Nicolao, L. Magni, R. Scattolini, "Some issues in the design of predictive controllers," *Int. J. Applied Math. and Computer Sc. - Special issue on Predictive Methods for Adaptive Control,* 9 (1999) 9-24.

[A52] P. Bolzern, P. Colaneri, G. De Nicolao, "H_∞-robustness of adaptive filters against measurement noise and parameter drift," *Automatica,* 35 (1999), 1509-1520.

[A53] G. De Nicolao, C. Rossi, R. Scattolini, M. Suffritti "Identification and idle speed control of internal combustion engines," *Control Engineering Practice* , 7 (1999) 1061-1069.

[A54] G. De Nicolao, D. Liberati, J. Veldhuis, A. Sartorio "LH and FSH secretory responses to GnRH in normal individuals: a non-parametric deconvolution approach," *Europ. J. of Endocrinol.,* 141 (1999) 246-256.

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[A56] P. Bolzern, P. Colaneri, G. De Nicolao "Tradeoff between mean-square and worst-case performances in adaptive filtering," *Europ. J. of Control,* 6 (2000) 78-88.

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[A62] G. De Nicolao, G. Ferrari Trecate, "Regularization networks: Fast weight calculation via Kalman filtering", *IEEE Trans. on Neural Networks,* TNN-12 (2001) 228-235.

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[A67] A. Sartorio, G. De Nicolao, D. Liberati, "An improved computational method to assess pituitary responsiveness to secretagogue stimuli," *Europ. J. of Endocrinology* 147 (2002) 323-332.

[A68] P. Magni, R. Bellazzi, G. De Nicolao, I. Poggesi, M. Rocchetti, "Nonparametric AUC estimation in population studies with incomplete sampling: A Bayesian approach" *J. Pharmacokinetics and Pharmacodynamics,* 29 (2002) 445-471.

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[A71] M. Germani, P. Magni, G. De Nicolao, I. Poggesi, A. Marsiglio, D. Ballinari, M. Rocchetti, "In vitro cell growth pharmacodynamic studies: a new nonparametric approach to determining the relative importance of drug concentration and treatment time," *Cancer Chemother. Pharmacol.,* 52 (2003) 507-513.

[A72] M. Simeoni, P. Magni, C. Cammia, G. De Nicolao, V. Croci, E. Pesenti, M. Germani, I. Poggesi, M. Rocchetti, "Predictive pharmacokinetic-pharmacodynamic modeling of tumor growth kinetics in xenograft models after administrations of anticancer agents," *Cancer Research,* 64 (2004) 1094-1101.

[A73] P. Bolzern, P. Colaneri, G. De Nicolao, "On discrete-time H_∞ fixed-lag smoothing," *IEEE Trans. on Signal Processing,* SP-52 (2004) 132-141.

[A74] M. Diehl, L. Magni, G. De Nicolao, "Efficient NMPC of unstable periodic systems using approximate infinite horizon closed loop control," *Annual Reviews in Control,* 28 (2004) 37-45.

[A75] Magni L., G. De Nicolao and R. Scattolini, "On the stabilization of nonlinear discrete-time systems with output feedback," *International Journal of Robust and Nonlinear Control*, 14 (2004) 1379-1391.

[A76] Rocchetti, M., I. Poggesi, M. Germani, F. Fiorentini, C. Pellizzoni, P. Zugnoni, E. Pesenti, M. Simeoni, G. De Nicolao, " A PK-PD model for predicting tumor growth inhibition in mice: a useful tool in oncology drug development," *Basic & Clinical Pharmacology & Toxicology*, 96 (2005) 265-268.

[A77] F. Di Palma, G. De Nicolao, G. Miraglia, E. Pasquinetti, F. Piccinini, "Unsupervised spatial pattern classification of electrical-wafer-sorting maps in semiconductor manufacturing", *Pattern Recognition Letters*, 26 (2005) 1857-1865.

[A78] P. Magni, M. Simeoni, I. Poggesi, M. Rocchetti, G. De Nicolao, "A mathematical model to study the effects of drugs administration on tumor growth dynamics", *Mathematical Biosciences*, 200 (2006) 127-151.

[A79] P. Bolzern, P. Colaneri, G. De Nicolao, "On almost sure stability of continuous-time Markov jump linear systems", *Automatica*, 42 (2006) 983-988.

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