# *Curriculum Vitae*


***Alessandro D'Innocenzo, PhD***

**Address:** Department of Information Engineering, Computer Science and Mathematics - University of L'Aquila. Via Vetoio, Coppito - 67100 L'Aquila (AQ) – Italy. Office: +39 0862 434461, Cell: +39 320 774 5349.
Email: *alessandro.dinnocenzo@univaq.it*, *adinnoce@gmail.com*


## *Education*

- **April 2nd, 2007:** Accomplishment of the International Curriculum Option of Doctoral Studies in Hybrid Control for Complex, Distributed and Heterogeneous Embedded Systems.
- **January 29th, 2007:** PhD Degree in Electrical and Information Engineering, Department of Electrical and Information Engineering, University of L'Aquila, Italy. *Title*: Observability and Temporal Properties of Hybrid Systems: Analysis and Verification. *Advisor*: Prof. M.D. Di Benedetto. *PhD Commission*: Prof. M.D. Di Benedetto, Prof. M.G. Di Benedetto, Prof. N. Benvenuto, Prof. G.J. Pappas.
- **From November 2003 to January 2007:** PhD student at the Department of Electrical and Information Engineering, University of L'Aquila, Italy.
- **July 21st, 2000:** Laurea Degree in Electronic Engineering, Department of Electrical Engineering, University of L'Aquila, Italy. 110/110 *cum laude*.
- **June 1994:** High School Diploma, Liceo Scientifico F. Masci, Chieti, Italy. 60/60.

## *Foreign Languages*

- English and German (fluent)

## *Work Experience*

**Since February 2020: Professore Associato (Associate Professor)** *Department of Information Engineering, Computer Science and Mathematics, Centre of Excellence EX-EMERGE, University of L'Aquila.*

**February 2017 - January 2020, Ricercatore a tempo determinato tipo-b (Assistant Professor type-b):** *Department of Information Engineering, Computer Science and Mathematics, Centre of Excellence DEWS, University of L'Aquila.*

**January 2010 – January 2017 Ricercatore a tempo determinato (Assistant Professor):** *Department of Information Engineering, Computer Science and Mathematics, Centre of Excellence DEWS, University of L'Aquila.*

**January 2007 - December 2009, Post-Doc:** *Centre of Excellence DEWS, University of L'Aquila.* Prof. M.D. Di Benedetto.

**March – December 2008, Post-Doc:** *Department of Electrical and Systems Engineering, University of Pennsylvania.* Prof. G.J. Pappas.

**July 2005 – December 2006, Consultant:** *Centre of Excellence DEWS, University of L'Aquila.* HYCON Project, *Hybrid Control: Taming Heterogeneity and Complexity of Networked Embedded Systems*, IST, Network of Excellence, contract n.511368.

**January 2003 – December 2004, Consultant:** *Centre of Excellence DEWS, University of L'Aquila.* Distributed Control and Stochastic Analysis of Hybrid Systems Supporting Safety Critical Real-Time Systems Design Project IST-2001-32460 HYBRIDGE.

**May – June 2004, Consultant:** *Department of mathematics "Federigo Enriques", University of Milano*. Topological interpretations of the transformations of a rectangle: cylinder, torus, Moebius strip, projective plan.

**March 2002 – December 2003, Consultant:** *Digital Video S.r.l., Roma.* Computer Graphics Programming.

**October 2000 – December 2004, Employee:** *Marconi S.p.a., Chieti.* Communication Systems (Simulation and control of the RANAP communication layer in UMTS networks): Software Engineer.

**September 2000, Post-thesis stage:** *Telecom Italia Lab, Torino*. Voice over IP – Circuit network gateway.

**September 1999 – July 2000, Industrial Thesis:** *Telecom Italia Lab, Torino*. Voice over IP – Circuit network gateway.

## *Awards and Qualifications*

- 2020: Member of the IFAC TC 1.5 on Networked Systems
- 2019: Best Work-in-progress paper, IEEE International Workshop on Factory Communication Systems
- 2019: National scientific qualification as Professor (Professore di I fascia) in Control Theory
- 2015: Best Application Paper Award, 14th annual European Control Conference (ECC'15)
- 2014: National scientific qualification as Associate Professor (Professore di II fascia) in Control Theory
- 2014: Elsevier Certificate of Excellence in reviewing.
- 2005: "Fondazione Filauro" Scholarship, University of L'Aquila, Italy.
- 1994 - 1999: Student scholarships, University of L'Aquila, Italy.

## *Governing boards*

- Member of the Executive committee and responsible of the research line on "Learning for Automation" of the *Centre of Excellence EX-EMERGE***,** DISIM Department. (November 2020 – now).
- Member of the Executive committee and responsible of the research line on "Building Automation" of the *INCIPIT project***,** University of L'Aquila. (April 2015 – now).

## *Institutional activities*

- Member of the Working group on Energy efficiency of buildings of the University of L'Aquila (2020 – now)
- Member of "Collegio dei Docenti", Dottorato NAZIONALE IN INTELLIGENZA ARTIFICIALE - DOT21WXZWM, Politecnico di Torino, Cycle 38
- Member of "Collegio dei Docenti", Dottorato in INGEGNERIA E SCIENZE DELL'INFORMAZIONE - DOT13VJY7J, Università degli Studi dell'AQUILA, Cycle 38
- Member of "Collegio dei Docenti", Dottorato NAZIONALE IN INTELLIGENZA ARTIFICIALE - DOT21WXZWM, Politecnico di Torino, Cycle 37
- Member of "Collegio dei Docenti", Dottorato in INGEGNERIA E SCIENZE DELL'INFORMAZIONE - DOT13VJY7J, Università degli Studi dell'AQUILA, Cycle 36
- Member of the Commission for "Incoming school orientation and placement" of the DISIM Department (2018 - now)
- Member of the Commission for "Relations with the territory" of the DISIM Department (2018 - now)
- Member of "Collegio dei Docenti", Dottorato in INGEGNERIA E SCIENZE DELL'INFORMAZIONE - DOT13VJY7J, Università degli Studi dell'AQUILA, Cycle 35
- Member of Collegio dei Docenti, Dottorato in INGEGNERIA E SCIENZE DELL'INFORMAZIONE - DOT13VJY7J, Università degli Studi dell'AQUILA, Cycle 34
- Member of the Energy Audit Commission at the University of L'Aquila (October 2017)
- Member of the Academic Senate at the University of L'Aquila (July 2012 - June 2015)
- Member of the Commission for Research at the University of L'Aquila (July 2012 - June 2013)
- Since 2010, member of several commissions for Master/Bachelor theses dissertation, Engineering state exam, Post-doc and PhD selection procedure, TFA qualification
- Member of the Working group on energy efficiency of the buildings of the University of L'Aquila (since January 2021)

## *Editorial Activities*

- 1st International Conference on Wireless Sensor Networks (WSN'12), Program Committee
- 12th European Control Conference (ECC'13), Program Committee Member
- 4th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys'13), Program Committee Member
- 13th European Control Conference (ECC'14), Associate Editor
- 14th European Control Conference (ECC'15), Associate Editor
- 5th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys'15), International Program Committee Member
- ACM International Conference on Hybrid Systems: Computation and Control (HSCC'16), Program Committee Member
- 15th European Control Conference (ECC'16), Associate Editor
- ACM International Conference on Hybrid Systems: Computation and Control (HSCC'17), Program Committee Member
- Workshop on COMMUNICATION AND NETWORKING TECHNIQUES FOR CONTEMPORARY VIDEO, IEEE International Conference on Computer Communications (IEEE INFOCOM'17), Program Committee Member
- 16th European Control Conference (ECC'18), Associate Editor

- 6th IFAC Conference on Analysis and Design of Hybrid Systems (ADHS'18). International Program Committee Member
- 7th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys'18). Associate Editor
- 17th European Control Conference (ECC'19), Associate Editor
- 13th International Conference on Reachability Problems RP'19), Program Committee member
- 18th European Control Conference (ECC'20), Associate Editor
- 19th European Control Conference (ECC'21), Associate Editor
- 7th IFAC Conference on Analysis and Design of Hybrid Systems (ADHS'21). International Program Committee Member
- 20th European Control Conference (ECC'22), Associate Editor
- Co-organizer of the Track "Application of Machine Learning and Artificial Intelligence in Smart Grids" in the IEEE MELECON 2022 conference.

Since 2005 reviewer for the most relevant conferences and journals in the control, computer science and communication scientific communities.

## *Research Projects*

- **Nomad Energy Solutions** (Contratto conto terzi): Sviluppo di un modello predittivo per dati termici e di consumo energetico di edifici intelligenti (Nomad Energy Solutions, Scotland, UK, 2022). **Scientific coordinator**
- **Teknovis3 (**Contratto conto terzi): Prototipo per stima risparmio energetico FTB (Teknovis3 S.r.l., 2020). **Scientific coordinator**
- **EMERGE:** Veicoli Commerciali Leggeri con Tecnologie Emergenti per operatività di «tutti i giorni» e di «ausilio nelle emergenze» **(MISE, 2019), Work Package OR11 Scientific coordinator.**
- **Valu3s:** Verification and Validation of Automated Systems' Safety and Security (ECSEL-JU, 2019). **Scientific coordinator.**
- **IREL4.0: Intelligent Reliability 4.0 (ECSEL-JU, 2019), Researcher.**
- **AIM1877124-1** (PON2014-2020, D.D. n. 407 del 27.02.2018), financed by MIUR for the recruitment of a "Ricercatore tempo determinato tipo a". **Scientific referent.**
- **FFABR2017**, funded by MIUR.
- **S.A.F.E.:** DESIGN SOSTENIBILE DI SISTEMI DI ARREDO CON FUNZIONE SALVAVITA DURANTE EVENTI SISMICI (PNR 2015-2020, di cui al D.D. del 13 luglio 2017 n. 1735), financed by MIUR. **Scientific coordinator.**
- **INCIPICT:** INnovating CIty Planning through Information and Communication Technologies. Funded by the Italian Government under Cipe resolution n.135, Dec. 21, 2012. **Management committee member.**
- **SAFECOP:** Safe Cooperating Cyber-Physical Systems using Wireless Communication. ECSEL PAB 2015.15 - Funding Call 2015-1. **Researcher.**
- **AQUAS:** Aggregated QUality Assurance for Systems. ECSEL Research and Innovation Actions (RIA) - Calls 2016. **Researcher.**
- **Model based methods for fault detection and control of the Telecom Italia service provider network** (Contratto conto terzi, 2013-2015), funded by Telecom Italia. **Scientific coordinator.**
- **HYCON2:** Highly-complex and networked control systems. EU FP7 NoE, 2010-2014. **Main researcher Univ. of L'Aquila.**

- **MAREA:** Mathematical approach towards resilience engineering in ATM. SESAR WP-E, 2011-2013. **Researcher.**
- **iFly:** Safety, Complexity and Responsibility based design and validation of highly automated Air Traffic Management. EU FP6 STREP, 2007-2011. **Main researcher Univ. of L'Aquila from Month 1 to Month 24.**
- **PRIN05:** Forecast and control systems for landslides: local sensor distributed networks integration, monitoring techniques and hydro-geological models. MIUR, 2006-2007. **Researcher.**
- **HYCON:** Hybrid Control: Taming Heterogeneity and Complexity of Networked Embedded Systems. EU FP6 NoE, 2004-2008. **Main researcher Univ. of L'Aquila.**
- **HYBRIDGE:** Distributed Control and Stochastic Analysis of Hybrid Systems Supporting Safety Critical Real-Time Systems Design. EU FP5 STREP, 2002-2005. **Researcher.**

## *Transfer of Technology*

- **Italian patent filing entitled** "PIATTAFORMA HARDWARE E SOFTWARE DI MONITORAGGIO E LOCALIZZAZIONE DI VITTIME DA TERREMOTO INTRAPPOLATE NELLE MACERIE A SUPPORTO DI INTERVENTI DI SOCCORSO"
- **Italian patent filing entitled** "METODO PER OTTIMIZZARE I CONSUMI ENERGETICI DI UN EDIFICIO"
- **Scientific coordinator** of a research contract, Nomad Energy Solutions (Scotland, UK), "Sviluppo di un modello predittivo per dati termici e di consumo energetico di edifici intelligenti".
- **Scientific coordinator** of the ToT teaching program "Smart vehicles", to be given at Tekne srl - Ortona (CH), Italy
- **Scientific coordinator** of a research contract, Teknovis3 Srl (Chieti), "Sviluppo di un prototipo per stima risparmio energetico del Flexible Thermal Blanket Teknovis3.(Verbale CdD DISIM@UNIVAQ del 22.04.2020).
- **Scientific coordinator** of a research contract, Telecom Italia (Roma), "Model based methods for fault detection and control of the Telecom Italia service provider network". Rif. Accordo di Ricerca Centro di Eccellenza DEWS (Università degli Studi di L'Aquila) e Telecom n. 20/2014 "Ip service..." prot. n. 174 del 05.05.2014, CUP E14G14000430007, Euro 20.000,00.
- **Scientific coordinator** of a research contract, Telecom Italia (Roma), "Model based methods for fault detection and control of the Telecom Italia service provider network". Rif. Accordo di Ricerca Centro di Eccellenza DEWS (Università degli Studi di L'Aquila) e Telecom n. 30/2015 "Ip service..." prot. n. 168 del 12.05.2015, CUP E12I15000600007, Euro 15.000,00.
- **Principal investigator** of the Remote Environmental Monitoring (REM) business project, which passed the first and second phase of the RICOSTRUIRE call for entrepreneurial ideas. 2013-2015

## *Invited plenary lectures*

**September 22, 2015:** Invited plenary speaker in the 9th International Workshop on Reachability Problems (RP'15). Warsaw, Poland, September 21-23, 2015.

## *Invited lectures in Workshops*

**January 10, 2017:** Invited speaker in the WORKSHOP on “HYBRID DYNAMICAL SYSTEMS: OPTIMIZATION, STABILITY AND APPLICATIONS”, University of Trento.

**October 27, 2016:** Invited speaker in the Co4 Workshop on "Control subject to Computational and Communication Constraints", Toulose.

**June 24, 2014:** Tutorial on “Modeling, analysis and design over wireless networking protocols for control tasks”, Workshop on "Control of large-scale distributed and cooperating systems", 13th European Control Conference.

**April 12th 2010:** *Probabilistic Model checking of Stochastic Hybrid Systems by Abstraction and application to air traffic management,* given at the Workshop on Modeling and Verification of Uncertain Hybrid Systems, affiliated event of Cyber-physical Systems Week CPS2010, Stockholm.

**November 3rd 2009:** *Observability and Diagnosability of Hybrid Automata, and their application in Air Traffic Management,* given at the Workshop on Formal Methods in Aerospace, affiliated event of Formal Methods Week FM2009, Eindhoven.

**April 30th 2009:** *Wireless mining ventilation control: a HYCON test case for networked control,* given at the INTERNATIONAL WORKSHOP ON HYBRID AND PREDICTIVE CONTROL FOR NONLINEAR INDUSTRIAL APPLICATIONS, University of Strathclyde, Glasgow, April 28-30, 2009.

## *Invited lectures*

**September 28, 2016:** Seminar on "Modeling and Co--design of Control Tasks over Wireless Networking Protocols", University of Pennsylvania, Philadelphia PA

**May 3, 2016**: Seminar on "Modeling and Co-design of Control Tasks over Wireless Networking Protocols", University of Oxford.

**February 23, 2016:** Seminar on "Modeling and Co--design of Control Tasks over Wireless Networking Protocols", TU-Berlin.

**March 4, 2014:** Invited seminar on "Formal methods for analysis and co-design of Wireless Networked Control Systems", given at the Centre for Systems Engineering and Applied Mechanics, Universite' Catholique de Louvain (UCL), Louvain-la-Neuve, Belgium.

**February 5, 2014:** Seminar on "Modelling, Analysis, Design and Fault Detection in Wireless Networked Control Systems", given at Siemens AG, München, Germany.

**June 10, 2013:** Seminar on "Fault tolerant control of multi-hop control networks", given at the Department of Electrical, Computer, and Systems Engineering, Rensselaer Polytechnic Institute, Troy NY.

**February 9, 2012:** Minicourse on *Modeling, analysis and design of multi-hop control networks*, given at the Department of Mechanical Engineering, Eindhoven University of Technology (TU/e), Eindhoven, Netherlands**.**

**December 6th 2011:** *Modeling, analysis and design of multi-hop control networks,* invited seminar given at the Centre for Systems Engineering and Applied Mechanics (CESAME), UCL - Université catholique de Louvain (UCL), Louvain-la-Neuve, Belgium.

**October 7th 2008:** *Finite approximate abstractions of Stochastic Hybrid Automata,* given at the University of Pisa, College of Engineering, Pisa, Italy.

**June 26th 2008:** *Wireless mining ventilation control: a HYCON test case for networked control,* given at the MIT, Lisbon, Portugal.

**January 31st 2008:** *Finite Abstractions of Hybrid Automata,* given at the KTH School of Electrical Engineering, Stockholm, Sweden.

**November 19th 2007:** *Observability and diagnosability of hybrid systems,* given at the IASI-CNR Institute (Istituto di Analisi dei Sistemi ed Informatica "A. Ruberti"), Rome.

**September 8th 2006:** *A Theoretical Framework for Control over Wireless Networks,* given at the NEWCOM-HYCON Technical Workshop on Embedded Systems and Infrastructureless Networks, Laboratoire des Signaux et Systemes, Centre National de la Recherche Scientifique, Supelec.

**June 20th 2006:** *On the observability problem for hybrid systems,* given at the Laboratoire des Signaux et Systemes, Centre National de la Recherche Scientifique, Supelec. Gif-sur-Yvette, France.

**May 22nd 2006:** *A Theoretical Framework for Control over Wireless Networks,* given at the NEWCOM-HYCON Technical Workshop on Embedded Systems and Infrastructureless Networks, Florence, Italy

**February 16th-17th 2006:** *Modeling of adaptive behaviors in control over wireless networks*, given at the Hycon WP4d meeting, PARADES, Rome, Italy

**February 8th 2006:** *Observability of Hybrid Automata by Abstraction*, given at the Department of Electrical and Systems Engineering of the University of Pennsylvania (Philadelphia)

**December 6th 2005:** *Observability of Hybrid Automata by Abstraction*, given at the EECS Department of the University of California Berkeley.

**February 21st 2005:** *Observability of Hybrid Systems and Application to Air Traffic Management*, given at the Grasp Lab, Department of Electrical and Systems Engineering, University of Pennsylvania.

## *Tutoring*

**Currently supervised assistant professors (Ricercatori tempo determinato tipo a):**

- F. Smarra: Disaster Resilience and Energy Efficiency in Building Automation Systems (within INCIPICT Project)
- V. De Iuliis, Model identification for large-scale Cyber-Physical Systems

**Currently supervised Post-Docs**

- Dr. Enrico Reticcioli

**Currently supervised PhD students:**

- A. Impicciatore, 2nd year PhD student, co-tutored with Prof. P. Pepe.
- L. Florenzan, 2nd year PhD student
- F. Simonetti, 1st year PhD student, co-tutored with Prof. C. Cecati

**Supervised PhD theses:**

- J. Tjen. **Entropy-Based Sensor Selection Algorithms for Damage Detection in SHM Systems.** PhD Thesis. Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, September 2021.
- E. Reticcioli. **Model Identification and Control of Priority Queueing in Software Defined Networks.** PhD Thesis, Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, May 2021.
- Y. Zacchia Lun. **Stability and optimal control of polytopic time-inhomogeneous Markov jump linear systems.** PhD Thesis, Gran Sasso Science Institute, September 2017
- G.D. Di Girolamo. **Co-design of controllers and information flows in networked control systems.** PhD Thesis, Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, July 2017
- F. Smarra. **Fault Tolerant Control of Multi-hop Networked Control Systems.** PhD Thesis, Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, April 2014.
- E. Serra. **Design & Verification of Multi-Hop Networked Control Systems.** PhD Thesis, Department of Electrical and Information Engineering, University of L'Aquila, March 2011.

**Supervised master theses:**

1. L. Guidotti. Identificazione del modello dell'inclinazione della struttura di ponteggio della "Torre Civica" rispetto alle condizioni metereologiche. Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Università degli Studi dell'Aquila, 2021.
2. S. Cardinale. **Model identification of COVID-19 epidemic in Italy**. Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Università degli Studi dell'Aquila, 2020
3. F. Simonetti. **Identificazione del modello e controllo di un dispositivo CHB STATCOM**. Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Università degli Studi dell'Aquila, 2020
4. M. Benedetti. Experimental validation of priority queueing in SDN using Regression Trees and Model Predictive Control. Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Università degli Studi dell'Aquila, 2020
5. L. Florenzan. **Energy-efficient power control in Communication Networks via Machine Learning**. Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Università degli Studi dell'Aquila, 2019
6. A. Impiciatore. **Stability analysis of wireless control networks via switching systems theory**. Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Università degli Studi dell'Aquila, 2019.
7. M. Mazurek. **Development of the Active Radiation Monitoring System of the LHCb Experiment at CERN**. Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Università degli Studi dell'Aquila, 2019. In collaboration with CERN, Geneva.
8. S. Abdufattokhov. **Data-driven Model Predictive Control using Gaussian Processes for Energy Efficient Building Management: A 'House in the Forest' Case Study**. Dipartimento

di Ingegneria e Scienze dell'Informazione e Matematica, Università degli Studi dell'Aquila, 2018.

9. A. Pandey. **Data-driven Model Predictive Control for Building Energy Optimization: A 'House in the Forest' Case Study**. Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Università degli Studi dell'Aquila, 2018.
10. J. Tjen. **Data-Predictive Control for Energy Efficient Building Management: Implementation on A Building of the University of L'Aquila.** Master Thesis, Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2017
11. E. Reticcioli. **Design and integration of a low-cost device for people counting in a SCADA building automation system.** Master Thesis, Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2017
12. Ibrahim. **Validation of a Model Predictive Control Algorithm for Priority-Based Routing.** Master Thesis, Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2016.
13. Mehrabi. **QoE based optimal control of priority queuing in a service provider network.** Master Thesis, Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2015.
14. Veeraraghavan. **Modeling of Traffic Congestion in a QoS Based Service Provider Network.** Master Thesis, Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2014.
15. Di Loreto. **Modellazione dell'effetto dei guasti nel Backbone di Telecom Italia sulla qualità dei servizi agli utenti.** Master Thesis (in Italian), Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2013.
16. G.D. Di Girolamo. **Sincronizzazione di clock su reti WirelessHART usando algoritmi di consenso.** Master Thesis (in Italian), Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2013.
17. R. Lalli. **Controllo della temperatura mediante l'uso di reti wireless negli "smart buildings".** Master Thesis (in Italian), Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2012.
18. S. Ferella. **Security di reti wireless: modellistica e analisi per sistemi MIMO.** Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, 2011.
19. M. Cecamore. **Analisi Formale e Progettazione di Procedure di Sicurezza in Infrastrutture Critiche Mediante la Tecnologia Bluetooth Low Energy.** Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, 2011.
20. G. Cacciavillani. **Analisi formale e progettazione di procedure di sicurezza in infrastrutture critiche mediante l'uso di NFC.** Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, 2011.
21. Di Domenico. **Analisi stocastica della stabilità di reti di controllo multi-hop con perdita di pacchetti**. Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, 2011.
22. N. Dell'Aquila. **Ottimizzazione della potenza di trasmissione per un sistema di controllo soggetto ad errori di comunicazione e quantizzazione**. Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, 2011.
23. Alessandri **Modellistica e analisi di problemi di security per sistemi di controllo su reti wireless**. Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, 2011.
24. Di Camillo. **Realizzazione di una Classe in C++ per la Costruzione Automatica di un Osservatore per Sistemi ad Eventi Discreti**. Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, 2011.

25. Marchegiani. **Controllo robusto di un veicolo mediante controllo digitale self-triggered**. Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, 2011.
26. G. Di Matteo. **Model checking probabilistico di procedure di controllo del tra-co aereo**. Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, 2009.
27. P. Proia. **Implementazione in linguaggio C++ della semantica "Hybrid System Interchange Format" per sistemi ibridi.** Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, July 2008.
28. L. Riccucci. **Analisi del consumo di potenza in un sistema di controllo della ventilazione di una miniera.** Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, June 2008.
29. Petriccone. **Modelli ibridi per la rappresentazione di procedure di controllo del traffico aereo.** Master Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, April 2008.
30. M. Colageo. **Hybrid modeling and observability analysis of the ATSA-In Trail Procedure.** Master Thesis (in English), Department of Electrical Engineering and Computer Science, University of L'Aquila, April 2008.
31. Di Francesco. **Hybrid observability analysis in an air traffic management multi-agent environment.** Master Thesis (in English), Department of Electrical Engineering and Computer Science, University of L'Aquila, April 2008.

**Supervised bachelor theses:**

1. L. De Tomasi. **Confronto tra tecniche basate su reti neurali ed alberi di regressione per l'identificazione di modelli di Building Management Systems.** Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Università degli Studi dell'Aquila, 2018.
2. R. Serino. **Rilevamento persone in un edificio tramite le misure del sistema SCADA di climatizzazione.** Bachelor Thesis, Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2017
3. R. Stante. **Conteggio di persone mediante algoritmi di rilevamento di movimento su piattaforma HW Raspberry Pi.** Bachelor Thesis, Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2017
4. R. Mazzoni. **Sviluppo di un tool Matlab per l'ottimizzazione del controllo su una rete multi-hop.** Master Thesis (in Italian), Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2013.
5. C. Poliandri. **Rilevamento di guasti di una rete di sensori wireless per il controllo di temperature all'interno di un edificio.** Master Thesis (in Italian), Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila, 2013.
6. M. Giannini. **Controllo della temperatura all'interno di un edificio attraverso una rete di sensori wireless soggetta a violazioni della sicurezza.** Bachelor Thesis (in Italian), Department of Electrical Engineering and Computer Science, University of L'Aquila, 2011.
7. L. Catenaro. **Sistemi ibridi ed applicazione ad uno scenario di Air Traffic Management.** Bachelor Thesis (in Italian), Department of Electrical and Information Engineering, University of L'Aquila, April 2007.
8. Mastroberardino. **Analisi delle interfacce tra nodi Mica2 e attuatori di controllo per mini cars.** Bachelor Thesis (in Italian), Department of Electrical and Information Engineering, University of L'Aquila, April 2007.
9. K. Palluzzi. **Analisi di un microcontrollore per mini cars.** Bachelor Thesis (in Italian), Department of Electrical and Information Engineering, University of L'Aquila, April 2007.

10. M. Di Giorgio. **Realizzazione di una Classe in C++ per la Costruzione Automatica di un Osservatore per Sistemi ad Eventi Discreti.** Bachelor Thesis (in Italian), Department of Electrical and Information Engineering, University of L'Aquila, December 2006.
11. E. Iacobucci. **Diagnosi e osservazione di automi temporizzati**. Bachelor Thesis (in Italian), Department of Electrical and Information Engineering, University of L'Aquila, July 2006.
12. G. Fiore. **Controllo di luminosità con disturbo per reti di sensori wireless**. Bachelor Thesis (in Italian), Department of Electrical and Information Engineering, University of L'Aquila, April 2006.
13. M. Pastore. **Analisi e controllo di un pendolo inverso su rete wireless**. Bachelor Thesis (in Italian), Department of Electrical and Information Engineering, University of L'Aquila, April 2006.
14. V. Ercoli. **Controllo di luminosità per reti di sensori wireless**. Bachelor Thesis (in Italian), Department of Electrical and Information Engineering, University of L'Aquila, February 2006.
15. M. Passerini. **Diagnosi di guasti in reti Wireless di sensori**. Bachelor Thesis (in Italian), Department of Electrical and Information Engineering, University of L'Aquila. December 2005.

## *International PhD courses*

- European Embedded Control Institute (EECI) Graduate School on Control, PhD course on "Modeling, analysis and design of wireless sensor and actuator network", A. D'Innocenzo and C. Fischione, TU-BERLIN, 22/02/2016 – 26/02/2016.

## *Bachelor and Master courses*

**Lecturer at the Department of Information Engineering, Computer Science and Mathematics, University of L'Aquila:**

2021-2022:
- Machine Learning for Smart cities automation, I4T, 6 CFU.
- Control Systems, I4W, 6 CFU.

2020-2021:
- Machine Learning for Smart cities automation, I4T, 6 CFU.
- Control Systems, I4W, 6 CFU.

2019-2020:
- Modelling and control of communication networks, I4T, 9 CFU. Dr. A. D'Innocenzo (6 CFU) and Dr. Francesco Smarra (3 CFU).
- Control Systems, I4W, 6 CFU.

2018-2019:
- Modelling and control of communication networks, I4T, 9 CFU.
- Control Systems, I4W, 6 CFU.
- Fundamentals of Machine Learning over Networks and Applications to control of Cyber Physical Systems, I4T, 3 CFU. Dr. A. D'Innocenzo (1 CFU), Prof. C. Fischione (1 CFU), Dr. Francesco Smarra (1 CFU)

2017-2018:

- Modelling and control of communication networks, I4T, 9 CFU.
- Control Systems, I4W, 6 CFU.

2016-2017:
- Modelling and control of communication networks, I4T, 9 CFU.
- Control Systems, I4W, 6 CFU.

2015-2016:
- Modelling and control of communication networks, I4T, 9 CFU.
- Control Systems, I4W, 6 CFU.

2014-2015:
- Controlli Automatici (Control systems), I3N, 9 CFU. Prof. Maria D. Di Benedetto (6 CFU) and Dr. Ing. A. D'Innocenzo (3 CFU).
- Control Systems, I4W, 6 CFU.
- Didattica dell'automatica, TFA A034/A035, 3CFU.

2013-2014:
- Fondamenti di Automatica (Elements of Linear Systems Theory), 6 CFU.
- Control Systems, 6 CFU.

2012-2013:
- Didattica di Sistemi Automatici, TFA, 3CFU.
- Ingegneria e Tecnologia dei Sistemi di Controllo (Engineering and Technology of Control Systems), 9 CFU.
- Control Systems, 6 CFU. Dr. Ing. A. D'Innocenzo (3 CFU) and Dr. Ing. G. Pola (3 CFU).

2011-2012:
- Ingegneria e Tecnologia dei Sistemi di Controllo (Engineering and Technology of Control Systems), 9 CFU. Dr. Ing. A. D'Innocenzo (6 CFU) and Prof. S. Di Gennaro (3 CFU).
- Control Systems, 6 CFU. Dr. Ing. A. D'Innocenzo (3 CFU) and Dr. Ing. G. Pola (3 CFU).

2010-2011:
- Analisi e controllo di sistemi ibridi (Analysis and control of hybrid systems), 9 CFU. Prof. M.D. Di Benedetto (6 CFU) and Dr. Ing. A. D'Innocenzo (3 CFU).
- Control Systems, 6 CFU. Prof. S. Di Gennaro (3 CFU) and Dr. Ing. A. D'Innocenzo (3 CFU).

2009-2010:
- Analisi e controllo di sistemi ibridi (Analysis and control of hybrid systems), 9 CFU. Prof. M.D. Di Benedetto (6 CFU) and Dr. Ing. A. D'Innocenzo (3 CFU).

**Teaching assistant at the Department of Electrical and Information Engineering, University of L'Aquila:**

- Ingegneria e Tecnologia dei Sistemi di Controllo (Engineering and Technology of Control Systems), Prof. S. Di Gennaro. Academic Years 2009-2011.
- Control Systems, Prof. M.D. Di Benedetto and S. Di Gennaro. Academic Year 2009-2010.
- Analisi e controllo di sistemi ibridi (Analysis and control of hybrid systems), Prof. M.D. Di Benedetto. Academic Years 2006-2009.

- Controlli Automatici (Automatic Control), Prof. M.D. Di Benedetto and S. Di Gennaro. Academic Years 2006 - 2007.

## *Publications*

**Magazine**

1. M.D. Di Benedetto and A. D'Innocenzo. Modelling, Analysis and Co-Design of Wireless Control Networks. ERCIM News – Special theme on Cyber-Physical Systems, vol. 97, pp. 9-10, 2014

**Journal papers**

25. F. Smarra, J. Tjen, A. D'Innocenzo. Learning methods for structural damage detection via entropy-based sensors selection. International Journal of Robust and Nonlinear Control, 2022.

24. De Iuliis, V., D'Innocenzo, A., Germani, A., Manes, C. Stability Analysis of Coupled Differential-Difference Systems with Multiple Time-Varying Delays: A Positivity-Based Approach. IEEE Transactions on Automatic Control, 2021, 66(12), pp. 6085–6092.

23. T. de Rubeis, F. Smarra, N. Gentile, A. D'Innocenzo, D. Ambrosini, D. Paoletti. Learning lighting models for optimal control of lighting system via experimental and numerical approach. Science and Technology for the Built Environment, https://doi.org/10.1080/23744731.2020.1846427, 2020.

22. V. De Iuliis, A. D'Innocenzo, A. Germani, C. Manes. Stability conditions for linear discrete-time switched systems in block companion form. Accepted for publication in IET Control Theory & Applications, 2020

21. Smarra F., Di Girolamo G.D., Gattulli V., Potenza F., D'Innocenzo A., Graziosi F., "Learning models for optimal control of seismic induced vibrations in frame structures via Random Forests". Journal of Optimization Theory and Applications, 2020.

20. Smarra F., Di Girolamo G.D., De Iuliis V., Jain A., Mangharam R., D'Innocenzo A., "Data-driven Switching Modeling for MPC using Regression Trees and Random Forests". Nonlinear Analysis: Hybrid Systems, Vol. 36, 2020.

19. Di Girolamo G.D., Smarra F., Gattulli V., Potenza F., Graziosi F., D'Innocenzo A., "Data-driven optimal predictive control of seismic induced vibrations in frame structures". Structural Control Health Monitoring, 2020.

18. Zacchia Lun, Yuriy, D'Innocenzo, Alessandro, Di Benedetto, Maria Domenica (2019). Robust stability of polytopic time-inhomogeneous Markov jump linear systems. AUTOMATICA, vol. 105, p. 286-297, ISSN: 0005-1098, doi: 10.1016/j.automatica.2019.03.031.

17. Di Girolamo, Giovanni Domenico, D'Innocenzo, Alessandro (2019). Codesign of controller, routing and scheduling in WirelessHART networked control systems. INTERNATIONAL JOURNAL OF ROBUST AND NONLINEAR CONTROL, ISSN: 1049-8923, doi: 10.1002/rnc.449.

16. Yuriy Zacchia Lun, Alessandro D'Innocenzo, Francesco Smarra, Ivano Malavolta, Maria Domenica Di Benedetto. State of the Art of Cyber-Physical Systems Security: an Automatic Control perspective. Journal of Systems and Software, 2018.

15. DE IULIIS, Vittorio; D'Innocenzo, Alessandro; Germani, Alfredo; Manes, Costanzo. Internally Positive Representations and Stability Analysis of Linear Differential Systems with Multiple Time-Varying Delays. DOI:10.1049/iet-cta.2018.5280. In IET CONTROL THEORY & APPLICATIONS - ISSN:1751-8652, 2018

14. Francesco Smarra, Achin Jain, Tullio de Rubeis, Dario Ambrosini, Alessandro D'Innocenzo, Rahul Mangharam. Data-Driven Model Predictive Control using Random Forests for Building Energy Optimization and Climate Control. Applied Energy (invited paper). 2018, in press.

13. F. Smarra, M. D. Di Benedetto, A. D'Innocenzo (2018). Efficient routing redundancy design over lossy networks. INTERNATIONAL JOURNAL OF ROBUST AND NONLINEAR CONTROL, ISSN: 1099-1239.

12. A. D'Innocenzo, F. Smarra, M.D. Di Benedetto. Resilient stabilization of Multi-Hop Control Networks subject to malicious attacks. Automatica, 71:1-9, September 2016.

11. R. M. Jungers, A. D'Innocenzo, M. D. Di Benedetto. Controllability of Linear Systems with Switching Delays. IEEE Transactions on Automatic Control, 61(4):1117-1122, 2016.

10. Yi Deng, A. D'Innocenzo, M. D. Di Benedetto, S. Di Gennaro, A. A. Julius. Verification of Hybrid Automata Diagnosability with Measurement Uncertainty. IEEE Transactions on Automatic Control, 61(4):982-993, 2016.

9. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo. Digital Self Triggered Robust Control of Nonlinear Systems. International Journal of Control, 86:1664-1672, 2013.

8. A. D'Innocenzo, M.D. Di Benedetto, E. Serra. Fault Tolerant Control of Multi-Hop Control Networks. IEEE Transactions on Automatic Control, full paper, 58(6):1377-1389, 2013.

7. R. Alur, D'Innocenzo A., K.H. Johansson, G.J. Pappas, G. Weiss. Compositional Modeling and Analysis of Multi-Hop Control Networks. IEEE Transactions on Automatic Control, Volume: 56, Issue: 10, 2011, Page(s): 2345 - 2357.

6. A. Abate, A. D'Innocenzo, M.D. Di Benedetto. Approximate Abstractions of Stochastic Hybrid Systems. IEEE Transactions on Automatic Control. Volume: 56 , Issue: 11. Page 2688–2694, 2011.

5. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo. Verification of Hybrid Automata Diagnosability by Abstraction. IEEE Transactions on Automatic Control, Volume: 56 , Issue: 9, 2011. Page(s): 2050 – 2061.DOI10.1109/TAC.2011.2105738.

4. E. Witrant, A. D'Innocenzo, G. Sandou, F. Santucci, M. D. Di Benedetto, A. J. Isaksson, K. H. Johansson, S.-I. Niculescu, S. Olaru, E. Serra, S. Tennina and U. Tiberi (2009), Wireless Ventilation Control for Large-Scale Systems: the Mining Industrial Case, International Journal of Robust and Nonlinear Control, Special Issue on Industrial Control over Wireless Networks (ICWN 08). Volume 20, Issue 2, pages 226–251, 25 January 2010. DOI10.1002/rnc.1485.

3. A. Abate, A. D'Innocenzo, M.D. Di Benedetto, S. Sastry (2008). Understanding Deadlock and Livelock Behaviors in Hybrid Control Systems. Nonlinear Analysis: Hybrid Systems, Volume 3, Issue 2, May 2009, Pages 150-162.

2. A.A. Julius, A. D'Innocenzo, G.J. Pappas, M.D. Di Benedetto (2007). Approximate equivalence and synchronization of metric transition systems. Systems & Control Letters, Volume 58, Issue 2, February 2009, Pages 94-101.

1. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo (2007). Discrete State Observability of Hybrid Systems. International Journal of Robust and Nonlinear Control, Special Issue on Observability and Observer Design for Hybrid Systems. Volume 19 Issue 14, Pages 1564 – 1580.

**Book chapters**

9. A. D'Innocenzo. Modeling and co-design of control tasks over wireless networking protocols. Invited chapter in "Control subject to Computational and Communication Constraints: Current Challenges", Lecture Notes in Control and Information Science (LNCIS), S. Tarbouriech, A. Girard and L. Hetel Eds., Springer-Verlag Berlin, Heidelberg.

8. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo. Hybrid Systems and Verification by Abstraction. Hybrid Dynamical Systems: Observation and Control, Lecture Notes in Control and Information Sciences, 457/2015:1-26, ISBN 978-3-319-10795-0, M. Djemai and M. Defoort Eds., Springer-Verlag Berlin, Heidelberg 2015.

7. M. D. Di Benedetto, A. Bicchi, A. D'Innocenzo, K. H. Johansson, A. Robertsson, F. Santucci, U. Tiberi, A. Tzes. Networked control. Handbook of Hybrid Systems Control, Theory, Tools, Application. J. Lunze and F. Lamnabhi Eds. - Cambridge University Press, 2009, 106-112.

6. A. Abate, A. D'Innocenzo, M.D. Di Benedetto, S. Sastry (2008). Markov Set-Chains as abstractions of Stochastic Hybrid Systems. In: Hybrid Systems: Computation and Control 2008, Lecture Notes in Computer Science.

5. A. Abate, A. D'Innocenzo, G. Pola, M.D. Di Benedetto, S. Sastry (2007). The Concept of Deadlock and Livelock in Hybrid Control Systems (2007). In: Hybrid Systems: Computation and Control 2007, Lecture Notes in Computer Science. Short paper.

4. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo (2007). Diagnosability Verification for Hybrid Automata. In: Hybrid Systems: Computation and Control 2007, Lecture Notes in Computer Science. Short paper.

3. A. D'Innocenzo, M.D. Di Benedetto, S. Di Gennaro (2006). Finite horizon observability of Hybrid Automata by Abstraction. CTS-HYCON Workshop on Nonlinear and Hybrid Control. July 10-12 2006. Paris La Sorbonne, International Scientific and Technical Encyclopedia (ISTE).

2. A. D'Innocenzo, M.D. Di Benedetto, S. Di Gennaro (2006). Observability of hybrid automata by abstraction. In: Hybrid Systems: Computation and Control (J. Hespanha and A. Tiwari, Eds.). Vol. 3927 of Lecture Notes in Computer Science. pp. 169-183. Springer Verlag.

1. E. De Santis, M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo, G. Pola. (2005) Critical Observability of a Class of Hybrid Systems and Application to Air Traffic Management , 2005, Lecture Notes on Control and Information Sciences , Springer Verlag.

**Conference proceedings**

70. Simonetti, F., Girolamo, G.D., D'Innocenzo, A., Cecati, C. A Neural Network Approach for Efficient Finite Control Set MPC of Cascaded H-Bridge STATCOM. IECON Proceedings (Industrial Electronics Conference), 2021, 2021-October

69. Florenzan Reyes, L.F., Smarra, F., Lun, Y.Z., D'Innocenzo, A. Learning markov models of fading channels in wireless control networks: A regression trees based approach. 2021 29th Mediterranean Conference on Control and Automation, MED 2021, 2021, pp. 232–237, 9480310

68. De Iuliis, V., Domenico Di Girolamo, G., Smarra, F., D'Innocenzo, A.. A comparison of classical identification and learning-based techniques for cyber-physical systems. 2021 29th Mediterranean Conference on Control and Automation, MED 2021, 2021, pp. 179–185, 9480333

67. Impicciatore, A., Lun, Y.Z., Pepe, P., D'Innocenzo, A.. Optimal output-feedback control and separation principle for Markov jump linear systems modeling wireless networked control scenarios. Proceedings of the American Control Conference, 2021, 2021-May, pp. 2700–2706, 9482674.

66. Impicciatore, A., D'Innocenzo, A., Pepe, P.. Sufficient Lyapunov conditions for pth moment ISS of discrete-time Markovian Switching Systems. Proceedings of the IEEE Conference on Decision and Control, 2020, 2020-December, pp. 6297–6302, 9304372

65. Vittorio De Iuliis, Francesco Smarra, Costanzo Manes, Alessandro D'Innocenzo. On the stability of switched ARX models, with an application to learning via Regression Trees. 7th IFAC Conference on Analysis and Design of Hybrid Systems (ADHS'21). Accepted for publication, 2021.

64. Elena Cinque, Francesco Valentini, Francesco Smarra, Fabio Franchi, Alessandro D'Innocenzo, Marco Pratesi. A Hardware-in-the-Loop Framework for Urban Mobility Scenarios within the 5G Trial in L'Aquila, URSI GASS. Accepted for publication, 2020.

63. J. Tien, F. Smarra, A. D'Innocenzo. An entropy-based sensor selection algorithm for structural damage detection. Proc. IEEE 16th International Conference on Automation Science and Engineering (CASE'20), Hong Kong, August 20-21, 2020. Virtual congress.

62. E. Reticcioli, G.D. Di Girolamo, F. Smarra, A. Carmenini, A. D'Innocenzo, F. Graziosi. "Learning SDN Traffic Flow Accurate Models to Enable Queue Bandwidth Dynamic Optimization". IEEE EuCNC 2020, Dubrovnik, Croatia. June 16-17.

61. Achin Jain, Francesco Smarra, Enrico Reticcioli, Alessandro D'Innocenzo and Manfred Morari. NeurOpt: Neural network based optimization for building energy management and climate control. 2nd Annual Conference on Learning for Dynamics and Control (L4DC20, Berkeley, California, June 10-11, 2020.

60. Francesco Smarra, Alessandro D'Innocenzo. Learning Markov Jump Affine Systems via Regression Trees for MPC. 21st IFAC World Congress Berlin, Germany, 12-17 July 2020.

59. Vittorio De Iuliis, Alessandro D'Innocenzo, Alfredo Germani, Costanzo Manes. On the stability of discrete-time linear switched systems in block companion form. 21st IFAC World Congress Berlin, Germany, 12-17 July 2020.

58. Daniele Masti, Francesco Smarra, Alessandro D'Innocenzo, Alberto Bemporad. Learning affine predictors for MPC of nonlinear systems via artificial neural networks. 21st IFAC World Congress Berlin, Germany, 12-17 July 2020.

57. Yuriy Zacchia Lun, Claudia Rinaldi, Amal Alrish, Alessandro D'Innocenzo, Fortunato Santucci. On the impact of accurate radio link modeling on the performance of WirelessHART control networks. IEEE INFOCOM 2020.

56. Yuriy Zacchia Lun, Alessandro Abate, Alessandro D'Innocenzo. Linear quadratic regulation of polytopic time-inhomogeneous Markov jump linear systems. European Control Conference, 2019

55. Alrish, A.; Lun, Y. Z.; D'Innocenzo, A.; Santucci, F. (2019). Work in Progress: Systematic Derivation of Accurate Analytic Markov Channel Models for Industrial Control. DOI:10.1109/WFCS.2019.8757917. pp.1-4. In IEEE International Workshop on Factory Communication Systems - Proceedings, WFCS - ISBN:978-1-7281-1268-8 vol. 2019 **[Best Work in Progress paper]**

54. Rubeis, Tullio; Gentile, Niko; Smarra, Francesco; D'Innocenzo, Alessandro; Ambrosini, Dario; Paoletti, Domenica. A Proposal For A Novel Method Based On Lighting Simulation And Data-Driven Model Predictive Control For Daylight Harvesting Optimization. Building Simulation 2019.

53. Vittorio De Iuliis, Alessandro D'Innocenzo, Alfredo Germani, Costanzo Manes. On the Stability of Coupled Differential-Difference Systems with Multiple Time-Varying Delays: A Positivity-Based Approach. 2019 IEEE 58th Conference on Decision and Control (CDC).

52. Yuriy Zacchia Lun, Alessandro D'Innocenzo. Stabilizability of Markov jump linear systems modeling wireless networked control scenarios. 2019 IEEE 58th Conference on Decision and Control (CDC).

51. Smarra, Francesco, Jain, Achin, Mangharam, Rahul, D'Innocenzo, Alessandro (2018). Data-driven Switched Affine Modeling for Model Predictive Control. In: (a cura di): Alessandro Abate Antoine Girard Maurice Heemels, Proc. 6th IFAC Conference on Analysis and Design of Hybrid Systems ADHS 2018. IFAC-PAPERSONLINE, vol. 51, p. 199-204, Elsevier B.V., ISSN: 2405-8963, doi: 10.1016/j.ifacol.2018.08.034

50. Yuriy Zacchia Lun, Jack Wheatley, Alessandro D'Innocenzo, Alessandro Abate. Approximate Abstractions of Markov Chains with Interval Decision Processes. 6th IFAC Conference on Analysis and Design of Hybrid Systems

49. ZACCHIA LUN, YURIY, D'Innocenzo, Alessandro, Benedetto, Maria Domenica Di (2017). Robust LQR for time-inhomogeneous Markov jump switched linear systems. In: (a cura di): IEEE, Proc. 20th IFAC World Congress. vol. 50, p. 2199-2204, Elsevier B.V., doi: 10.1016/j.ifacol.2017.08.281

48. Y. Zacchia Lun, A. D'Innocenzo, A. Abate, M.D. Di Benedetto. Optimal robust control and a separation principle for polytopic time-inhomogeneous Markov jump linear systems. 56th IEEE Conference on Decision and Control, Melbourne, Australia, December 12-15, 2017.

47. G.D. Di Girolamo, A. D'Innocenzo, M.D. Di Benedetto. Data-rate and network coding co-design with stability and capacity constraints. 20th IFAC World Congress, Toulouse, France, July 9-14, 2017.

46. F. Smarra, A. D'Innocenzo, M.D. Di Benedetto. A sub-optimal method for routing redundancy design over lossy networks. 20th IFAC World Congress, Toulouse, France, July 9-14, 2017.

45. Y. Zacchia Lun, A. D'Innocenzo, M.D. Di Benedetto. Robust LQR for time-inhomogeneous Markov jump switched linear systems. 20th IFAC World Congress, Toulouse, France, July 9-14, 2017.

44. Y. Zacchia Lun, A. D'Innocenzo, M.D. Di Benedetto. Robust stability of time-inhomogeneous Markov Jump Linear Systems. 20th IFAC World Congress, Toulouse, France, July 9-14, 2017.

43. Y. Zacchia Lun, A. D'Innocenzo, M.D. Di Benedetto. On stability of time-inhomogeneous Markov jump linear systems. 55th IEEE Conference on Decision and Control, Las Vegas, US, December 12-14, 2016.

42. A. Cicone, A. D'Innocenzo, N. Guglielmi, L. Laglia. A sub-optimal solution for optimal control of linear systems with unmeasurable switching delays. 54th IEEE Conference on Decision and Control, Osaka, Japan, December 15-18, 2015.

41. Yi Deng, A. Dinnocenzo, A.A. Julius. Trajectory-Based Observer for Hybrid Automata Fault Diagnosis. 54th IEEE Conference on Decision and Control, Osaka, Japan, December 15-18, 2015.

40. G. D. Di Girolamo, A. D'Innocenzo, M. D. Di Benedetto. Co-design of controller, routing and network coding over a wireless network. 5th IFAC Workshop on Estimation and Control of Networked Systems (NecSys 2015), Philadelphia PA, September 10-11, 2015.

39. F. Smarra, A. D'Innocenzo, M. D. Di Benedetto. Approximation methods for optimal network coding in a multi-hop control network with packet losses. 14th European Control Conference (ECC 2015), Linz, Austria, July 15-17, 2015.

38. A. D'Innocenzo, F. Smarra, M. D. Di Benedetto. Further results on fault detection and isolation of malicious nodes in Multi-hop Control Networks. 14th European Control Conference (ECC 2015), Linz, Austria, July 15-17, 2015. Best application paper award.

37. Yi Deng, A. A. Julius, A. D'Innocenzo. Probabilistic Diagnosability of Hybrid Systems. 18th International Conference on Hybrid Systems: Computation and Control (HSCC 2015), Seattle, Washington, USA, April 14-16, 2015.

36. C. Antonelli, A. D'Innocenzo, V. Gattulli, F. Graziosi, M. Tivoli, F. Franchi. INCIPICT: Innovating City Planning through Information and Communication Technologies. CINI Annual workshop on ICT for smart cities & communities, Palermo, Italy, October 29-30, 2015.

35. R. M. Jungers, A. D'Innocenzo, M. D. Di Benedetto. How to control linear systems with switching delays. 13th European Control Conference (ECC 2014), Strasbourg, France, June 24-27, 2014.

34. R. M. Jungers, A. D'Innocenzo, M. D. Di Benedetto. Further results on controllability of linear systems with switching delays. 9th IFAC World Congress, Cape Town, South Africa, August 24-29, 2014.

33. M. D. Di Benedetto, A. Di Loreto, A. D'Innocenzo, T. Ionta. Modeling of traffic congestion and re-routing in a service provider network. IEEE ICC 2014, Workshop on QoE-centric Network and Application Management, Sydney, Australia, June 10-14, 2014.

32. A. A. Julius and A. D'Innocenzo. Combining Analytical Technique and Randomized Algorithm in Safety Verification of Stochastic Hybrid Systems. American Control Conference (ACC14), Portland, OR, June 4-6, 2014.

31. M.D. Di Benedetto, A. D'Innocenzo, F. Smarra. Fault-tolerant control of a wireless HVAC control system. Special Session on Wireless Sensor and Actuator Networks Applications, International Symposium on Communications, Control and Signal Processing (ISCCSP2014), Athens, Greece, May 21-23, 2014.

30. A. D'Innocenzo, M.D. Di Benedetto, F. Smarra. Fault detection and isolation of malicious nodes in MIMO Multi-hop Control Networks. 52nd IEEE Conference on Decision and Control, Firenze, Italy, December 10-13, 2013.

29. R.M. Jungers, A. D'Innocenzo, M.D. Di Benedetto. Feedback stabilization of dynamical systems with switched delays. 51st IEEE Conference on Decision and Control, Maui, Hawaii, December 10-13 2012.

28. F. Smarra, A. D'Innocenzo, M.D. Di Benedetto. Optimal co-design of control, scheduling and routing in multi-hop control networks. 51st IEEE Conference on Decision and Control, Maui, Hawaii, December 10-13 2012.

27. F. Smarra, A. D'Innocenzo, M.D. Di Benedetto. Fault Tolerant Stabilizability of MIMO Multi-Hop Control Networks. 3rd IFAC Workshop on Estimation and Control of Networked Systems (NecSys'12), Santa Barbara, CA, September 14-15, 2012.

M. D. Di Benedetto, A. D'Innocenzo. Invited Session on Networked control systems. 4th IFAC Conference on Analysis and Design of Hybrid Systems, Eindhoven, The Netherlands. June 6-8, 2012.

26. A. D'Innocenzo, C. Rinaldi, M.D. Di Benedetto and F. Santucci. Hybrid power control on a wireless networked control system. 4th IFAC Conference on Analysis and Design of Hybrid Systems, ISBN: 978-3-902823-00-7, Eindhoven, The Netherlands. June 6-8, 2012. Invited Session on Networked control systems

25. C. Rinaldi, A. D'Innocenzo, M.D. Di Benedetto and F. Santucci. A framework for modeling wireless embedded control systems. In Proceedings of the 5th International Symposium on Communications, Control and Signal Processing, pages 1-4, ISBN: 978-1-4673-0274-6, Rome, Italy. May 2-4, 2012.

24. A. D'Innocenzo, A. Abate and J.-P. Katoen. Robust PCTL Model Checking. Proceedings of the 15th ACM international conference on Hybrid Systems: Computation and Control, Pages 275-286, ISBN: 978-1-4503-1220-2, ACM New York, NY, USA ©2012.

23. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo. Digital Self Triggered Robust Control of Nonlinear Systems. In Proceedings of the 50th IEEE Conference on Decision and Control and nd European Control Conference, pages 1674-1679, ISBN: 978-1-61284-800-6, Orlando, Florida, USA, December 12-15, 2011.

22. A. D'Innocenzo, M.D. Di Benedetto, and E. Serra. Link Failure Detection in Multi-hop Control Networks. In Proceedings of the 50th IEEE Conference on Decision and Control and nd European Control Conference, pages 5248-5253, ISBN: 978-1-61284-800-6, Orlando, Florida, USA, December 12-15, 2011.

21. M.D. Di Benedetto, A. D'Innocenzo, and E. Serra. Fault Tolerant Stabilizability of Multi-Hop Control Networks. In Proceedings of the 18th IFAC World Congress, Milan, Italy, pages 5651-5656, September 2011.

20. M.D. Di Benedetto, A. D'Innocenzo, and E. Serra. Dynamical Power Optimization by Decentralized Routing Control in Multi-Hop Wireless Control Networks. In Proceedings of the 18th IFAC World Congress, pages 8957-8962, ISBN: 978-3-902661-93-7, Milan, Italy, August 28-September 2, 2011.

19. C. Rinaldi, A. D'Innocenzo, A. Abate, M. Di Benedetto and F. Santucci. A Framework for Modeling and Computation in Wireless Embedded Control Systems. in *Proceedings of AICA*, Aug 2011.

18. M.D. Di Benedetto, G. Di Matteo and A. D'Innocenzo. Stochastic validation of ATM procedures by abstraction algorithms. 4th International Conference on Research in Air Transportation, Budapest, Hungary, June 1-4, 2010.

17. G. Weiss, A. D'Innocenzo, R. Alur, K.H. Johansson, G.J. Pappas. Robust Stability of Multi-Hop Control Networks. In Proceedings of the 48th IEEE Conference on Decision and Control and the 28th Chinese Control Conference, pages 2210-2215, ISBN: 978-1-4244-3871-6, Shangai, China, December 15-18, 2010.

16. A. D'Innocenzo, G. Weiss, R. Alur, A.J. Isaksson, K.H. Johansson, George J. Pappas. Scalable scheduling algorithms for wireless networked control systems. In Proceedings of the 5th IEEE International Conference on Automation Science and Engineering, pages 409-414, ISBN: 978-1-4244-4578-3, Bangalore, India, August 22-25, 2009.

15. R. Alur, A. D'Innocenzo, K.H. Johansson, G.J. Pappas, G. Weiss. Modeling and Analysis of Multi-Hop Control Networks. In Proceedings of the 15th IEEE Real-Time and Embedded Technology and Applications Symposium, pages 223-232, ISBN: 978-0-7695-3636-1, San Francisco, CA, United States, April 13-16, 2009.

14. M.D. Di Benedetto, A. D'Innocenzo, A.J. Isakson, K.H. Johansson, S.-I. Niculescu, S. Olaru, G. Sandou, F. Santucci, E. Serra, S. Tennina, U. Tiberi, E. Witrant. Wireless Ventilation Control for Large-Scale Systems: the Mining Industrial Case. 6th Annual IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks Workshops (SECON Workshops '09), Rome, Italy, June 22-26, 2009.

13. M.D. Di Benedetto, A. D'Innocenzo, A. Petriccone. Automatic Verification of Temporal Properties of Air Traffic Management Procedures Using Hybrid Systems. 7th EUROCONTROL Innovative Research Workshop & Exhibition. EUROCONTROL Experimental Centre, Paris, France, December 2-4, 2008.

A. Abate, A. D'Innocenzo. Invited Session on Abstraction techniques for dynamical systems. Proceedings of the 47th IEEE Conference on Decision and Control, Cancun, Mexico, December 9-11, 2008.

12. A. D'Innocenzo, A. Abate, M.D. Di Benedetto. Approximate Abstractions of Discrete-Time Controlled Stochastic Hybrid Systems. Proceedings of the 47th IEEE Conference on Decision and Control, Invited Session on Abstraction techniques for dynamical systems, pages 221-226, ISBN: 978-1-4244-3123-6, Cancun, Mexico, December 9-11, 2008.

11. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo. Diagnosability of hybrid automata with measurement uncertainty. Proceedings of the 47th IEEE Conference on Decision and Control, pages 1042-1047, ISBN: 978-1-4244-3123-6, Cancun, Mexico, December 9-11, 2008.

10. M.D. Di Benedetto, A. D'Innocenzo, E. Serra, E. Witrant. Automatic Verification of Wireless Control in a Mining Ventilation System. In Proceedings of the 4th IEEE Conference on Automation Science and Engineering, Special Session on Ventilation Control in Large-Scale Systems, pages 858-863, ISBN: 978-1-4244-2022-3, Washington DC, USA, August 23-26, 2008.

9. A. D'Innocenzo, M.D. Di Benedetto, S. Di Gennario. Fault diagnosis in a wireless network. In Proceedings of the 17th IFAC World Congress, pages 7271-7275, ISBN: 978-3-902661-00-5, Seoul, Korea, July 6-8, 2008.

8. A. D'Innocenzo, A.A. Julius, G.J. Pappas, M. D. Di Benedetto, S. Di Gennaro. Verification of temporal properties on hybrid automata by simulation relations. In Proceedings of the 46th IEEE Conference on Decision and Control, pages 4039-4044, ISBN: 978-1-4244-1497-0, New Orleans, LA, USA, December 12-14, 2007.

7. A. D'Innocenzo, A.A. Julius, M. D. Di Benedetto, G.J. Pappas. Approximate timed abstractions of hybrid automata. In Proceedings of the 46th IEEE Conference on Decision and Control, pages 4045-4050, ISBN: 978-1-4244-1497-0, New Orleans, LA, USA, December 12-14, 2007.

6. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo. Diagnosability Verification for Hybrid Automata and Durational Graphs. In Proceedings of the 46th IEEE Conference on Decision and Control, Invited Session on Observability and Observer-Based Control of Hybrid Systems, pages 4045-4050, ISBN: 978-1-4244-1497-0, New Orleans, LA, USA, December 12-14, 2007.

5. M.D. Di Benedetto, A. D'Innocenzo, C. Rinaldi, F. Santucci, E. Serra. Modelling and Design of Control Algorithms over Wireless Networks. In Proceedings of the IEEE International Conference on Control Applications, Invited Session on Industrial Control Over Wireless Networks, pages 1018-1023, ISBN: 978-1-4244-0443-8, Singapore, October 1-3, 2007.

4. M.D. Di Benedetto, A. D'Innocenzo, G. Pola, C. Rinaldi, F. Santucci. A Theoretical Framework for Control over Wireless Networks. In Proceedings of the 17th International Symposium on Mathematical Theory of Network and Systems, Invited paper in the Mini-Symposium on Distributed Decision-Making Over Ad Hoc Networks, Kyoto, Japan, July 24-28, 2006.

3. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo. Critical States Detection with Bounded Probability of False Alarm and Application to Air Traffic Management. In Proceedings of the 2nd IFAC Conference on Analysis and Design of Hybrid Systems, pages 24-29, ISBN: 978-1-61839-617-4, Alghero, Sardinia, Italy, June 7-9, 2006.

2. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo. Error Detection within a Specific Time Horizon and Application to Air Traffic Management. In Proceedings of the 44th IEEE Conference on Decision and Control and European Control Conference, pages 7472-7477, ISBN: 0-7803-9567-0, Seville, Spain, December 12-15, 2005.

1. M.D. Di Benedetto, S. Di Gennaro, A. D'Innocenzo. Critical Observability and Hybrid Observers for Error Detection in Air Traffic Management. In Proceedings of the IEEE International Symposium on Intelligent Control and 3rd Mediterranean Conference on Control and Automation, pages 1303-1308, ISBN: 0-7803-8936-0, Limassol, Cyprus, June 27-29, 2005.

**Theses**

A. D'Innocenzo. Observability and Temporal Properties of Hybrid Systems: Analysis and Verification. PhD Thesis, January 29, 2007. Department of Electrical Engineering and Computer Science, University of L'Aquila.

A. D'Innocenzo. Trasmissione di voce su reti IP e valutazione della qualità del servizio (Voice over IP transmission and quality of service evaluation). Master Thesis, July 2000. Department of Electrical Engineering, University of L'Aquila. In Italian.