Curriculum Vitae

INFORMAZIONI PERSONALI

Nome   ANTONINO
Cognome   SFERLAZZA
E-mail   antonino.sferlazza@unipa.it

FORMAZIONE TITOLI

PhD in electrical, electronics and telecommunication engineering, mathematics and automatics, as well as the qualification of **Doctor Europaeus**. University of Palermo, Italy.
Advisors: Prof. F. Alonge, Prof. M. Cirrincione (UTBM, France) and Ing. Marcello Pucci (ISSIA CNR).
Thesis title: "*Advanced Motion Control in Induction Motor Systems: Modelling, Analysis and Control*", Panel: Prof. Stéphane Caux, Prof. Saverio Mascolo, and Prof. Adriano Fagiolini.
External Reviewers: Prof. Pericle Zanchetta (University of Nottingam), Prof. Franck Plestan (Ecole Centrale de Nantes).

Visiting PhD student at LAAS CNRS, Toulouse, FRANCE. Period: May 2014 - August 2014. Topic: Design of observers for linear time-varying systems.

Visiting PhD student at UCSB University of California at Santa Barbara, Santa Barbara, CA, USA. Period: January 2013 - July 2013. Topic: Modeling and analysis of stochastic hybrid systems.

Master degree in Automation Engineering, Final score: 110/110 cum laude. University of Palermo, Italy.

International postgraduate schools:

(July 2012) PhD Summer School.
Topic: **Estimation and identification of stochastic systems and flight control**.
Bertinoro, Italy.

(April 2013) Course for post-graduate students.
Topic: **Dynamics over networks**.
UCSB University of California at Santa Barbara, Santa Barbara, CA, USA.

(July 2014) PhD Summer School.
Topic: **Analysis and control of nonlinear systems and unmanned aerial vehicles**.
Bertinoro, Italy.

(September 2014) International School of Automatic Control.
Topic: **Modern tools for nonlinear control**.
GIPSA-lab, Departement d'Automatique, Grenoble, France.

ATTIVITA' DIDATTICA

Lecturer of the course of: **Data Analysis**. *Bachelor in Cybernetic Engineering.* University of Palermo, Department DEIM, Palermo, Italy.

Lecturer of the course of: **Robust Control**. *Master in Electronic Engineerin*g. University of Palermo, Department DEIM, Palermo, Italy.

Lecturer of the course of: **Automotive Control Systems**. *Master in Electronic Engineering.* University of Palermo, Department DEIM, Palermo, Italy.

Lecturer of the course of: **Power Converters and Electrical Drives**. *Advanced course for PhD Students.* University of Trento, Department of Industrial Engineering, Trento, Italy.

Lecturer of the course of: **System Identification and Data Analysis**. *Master in Automation and Telecommunication Engineering.* University of Palermo, Department DEIM, Palermo, Italy.

Assistant of Prof. F. Alonge of the course of: **Automatic Control**, *Bachelor in Cybernetic and Electronic Engineering.* University of Palermo, Department DEIM, Palermo, Italy.

Assistant of Prof. L. Zaccarian of the course of: **Automatic Control**. *Master in Mechatronic Engineering*. University of Trento, Department of Industrial Engineering, Trento, Italy.

INCARICHI / CONSULENZE

(May 2017 - February 2018) **Research Fellow**.
LAAS CNRS, Toulouse, France.
Topics: *Design of hybrid control techniques for quadratic boost converters and boost inverters. Experimental development of converter prototypes for validation of variable frequency control methodologies.*

(February 2017 - May 2017) **Research Fellow**.
University of Trento, Department of Industrial Engineering, Trento, Italy.
Topic: *Variable stiffness control law for mechanical guidance systems for assistive robotics.*

(November 2016 - December 2016) **Visiting Researcher**.
LAAS CNRS, Toulouse, France.
Topic: *Design of hybrid observer for linear systems with asynchronous discrete-time measurements.*

(August 2015 - November 2016) **Research Fellow**.
University of Palermo, Department DEIM, Palermo, Italy.
Topics: *Position and attitude estimation and control of marine vehicles based on vision and inertial sensors, and physiological parameters monitoring in marine environment.*

(January 2012- Currently) **Research Collaborator**.
ISSIA CRN (Institute for the Study of intelligent Systems and Automation - National Council of Research), Palermo, Italy.
Topics: *Analysis, design and experimental evaluation of high performance control techniques for electrical motor drives and power converters. Sensorless control for electrical drives. Model identification applied to electrical motors and power converters* .

PUBBLICAZIONE

Journal Papers:

J1) F. Alonge, F. D'Ippolito, and A. Sferlazza, "*Sensorless control of induction-motor drive based on robust kalman filter and adaptive speed estimation*", IEEE Transactions on Industrial Electronics, vol. 61, no. 3, pp. 1444–1453, 2014.

J2) F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, and A. Sferlazza, "*Parameter identification of linear induction motor model in extended range of operation by means of input-output data*", IEEE Transactions on Industry Applications, vol. 50, no. 2, pp. 959–972, 2014.

J3) F. Alonge, D. Filippo, A. Fagiolini, and A. Sferlazza, "*Extended complex kalman filter for sensorless control of an induction motor*", Control Engineering Practice, vol. 27, pp. 1–10, 2014.

J4) F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, A. Sferlazza, and G. Vitale, "*Descriptor-type kalman filter and TLS EXIN speed estimate for sensorless control of a linear induction motor*", IEEE Transactions on Industry Applications, vol. 50, no. 6, pp. 3754 – 3766, 2014.

J5) A. R. Teel, A. Subbaraman, and A. Sferlazza, "*Stability analysis for stochastic hybrid systems: A survey*", Automatica, vol. 50, no. 10, pp. 2435–2456, 2014.

J6) F. Alonge, M. Cirrincione, M. Pucci, and A. Sferlazza, "*Input-output feedback linearizing control of linear induction motor taking into consideration the end-effects. Part I: Theoretical analysis*", Control Engineering Practice, vol. 36, no. 0, pp. 133–141, 2015.

J7) F. Alonge, M. Cirrincione, M. Pucci, and A. Sferlazza, "*Input-output feedback linearizing control of linear induction motor taking into consideration the end-effects. Part II: Simulation and experimental results*", Control Engineering Practice, vol. 36, no. 0, pp. 142–150, 2015.

J8) F. Alonge, F. D'Ippolito, A. Fagiolini, and A. Sferlazza, "*Convergence analysis of extended kalman filter for sensorless control of induction motor*", IEEE Transactions on Industrial Electronics, vol. 62, no. 4, pp. 2341–2352, 2015.

J9) S. Chiappone, O. Giuffre, A. Grana, R. Mauro, and A. Sferlazza, "*Traffic simulation models calibration using speed-density relationship: An automated procedure based on genetic algorithm*", Expert Systems with Applications, vol. 44, pp. 147–155, 2016.

J10) F. Alonge, M. Cirrincione, M. Pucci, and A. Sferlazza, "*Input-output feedback linearization control with on-line MRAS based inductor resistance estimation of linear induction motors including the dynamic end-effects,*" IEEE Transactions on Industry Applications, vol. 52, no. 1, pp. 254–266, 2016.

J11) F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, and A. Sferlazza, "*Adaptive feedback linearizing control of linear induction motor considering the end-effects*", Control Engineering Practice, vol. 55, pp. 116–126, 2016.

J12) F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, and A. Sferlazza, "*Feedback linearizing control of induction motor considering magnetic saturation effects*", IEEE Transactions on Industry Applications, vol. 52, no. 6, pp. 4843–4854, 2016.

J13) O. Giuffre, A. Grana, T. Maria Luisa, and A. Sferlazza, "*Estimation of passenger car equivalents for single-lane roundabouts using a microsimulation-based procedure*", Expert Systems with Applications, vol. 79, pp. 333–347, 2017.

J14) F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, and A. Sferlazza, "*Robust active disturbance rejection control of induction motor systems based on additional sliding mode component*", IEEE Transactions on Industrial Electronics, vol. 64, no. 7, pp. 5608–5621, 2017.

J15) F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, and A. Sferlazza, "*Active disturbance rejection control of linear induction motor*", IEEE Transactions on Industry Applications, vol. 53, no. 5, pp. 4460–4471, 2017.

J16) F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, and A. Sferlazza, "*A nonlinear observer for rotor flux estimation of induction motor considering the estimated magnetization characteristic*", IEEE Transactions on Industry Applications, vol. 53, no. 6, pp. 5952–5965, 2017.

J17) O. Giuffrè, A. Granà, M. L. Tumminello, and A. Sferlazza, "*Capacity-based calculation of passenger car equivalents using traffic simulation at double-lane roundabouts*", Simulation Modelling Practice and Theory, vol. 81, pp. 11–30, 2018.

J18) A. Sferlazza, S. Tarbouriech, and L. Zaccarian, "*Time-varying sampled-data observer with asynchronous measurements*", IEEE Transactions on Automatic Control, 2018.

J19) O. Giuffrè, A. Granà, M. L. Tumminello, T. Giuffrè, S. Trubia, A. Sferlazza, and M. Rencelj, "*Evaluation of Roundabout Safety Performance through Surrogate Safety Measures from Microsimulation*", Journal of Advanced Transportation, vol. 2018, 2018.

J20) A. Accetta, F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, R. Rabbeni, and A. Sferlazza, "*Robust control for high performance induction motor drives based on partial state-feedback linearization*", IEEE Transactions on Industry Applications, vol. 55, no. 1, pp. 490–503, 2019.

Papers in International Conferences:

C1) M. Pucci, A. Sferlazza, G. Vitale, and F. Alonge, "*MRAS sensorless techniques for high performance linear induction motor drives*", EPE-PEMC 2010 - IEEE International Power Electronics and Motion Control Conference, 2010.

C2) M. Cirrincione, M. Pucci, A. Sferlazza, and G. Vitale, "*Neural based mras sensorless techniques for high performance linear induction motor drives*", IECON 2010 - 36th Annual Conference on IEEE Industrial Electronics Society, p.p. 918-926, 2010.

C3) F. Alonge, F. D'Ippolito, and A. Sferlazza, "*Descriptor-type robust kalman filter and neural adaptive speed estimation scheme for sensorless control of induction motor drive systems*", ROCOND 2012 - 7th IFAC Symposium on Robust Control Design, vol. 45, No. 13, p.p. 51-56, 2012.

C4) F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, and A. Sferlazza, "*Parameter identification of linear induction motor model in extended range of operation by means of input-output data*", ECCE 2012 - IEEE Energy Conversion Congress and Exposition, 2012.

C5) F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, and A. Sferlazza, "*Descriptor-type kalman filter and TLS EXIN speed estimate for sensorless control of a linear induction motor*", SLED 2012 - 3th IEEE International Symposium on Sensorless Control for Electrical Drives, 2012.

C6) F. Alonge, M. Cirrincione, M. Pucci, and A. Sferlazza, "*Input-output feedback linearization control of linear induction motors including the dynamic end-effects*", ECCE 2014 - IEEE Energy Conversion Congress and Exposition, pp. 3562–3569, 2014.

C7) A. Accetta, F. Alonge, M. Cirrincione, M. Pucci, and A. Sferlazza, "*Parameter identification of induction motor model by means of state space-vector model output error minimization*", ICEM 2014 - IEEE International Conference on Electrical Machines, pp. 843–849, 2014.

C8) F. Alonge, M. Cirrincione, M. Pucci, and A. Sferlazza, "*Feedback linearizing control of induction motor considering magnetic saturation effects*", ECCE 2015 - IEEE Energy Conversion Congress and Exposition, pp. 4463–4470, 2015.

C9) F. Alonge, M. Cirrincione, M. Pucci, and A. Sferlazza, "*A nonlinear observer for rotor flux estimation considering magnetic saturation effects in induction motor drives*", ECCE 2015 - IEEE Energy Conversion Congress and Exposition, pp. 2892–2898, 2015.

C10) F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, and A. Sferlazza, "*Active disturbance rejection control of linear induction motor*", IEEE Energy Conversion Congress and Exposition, p.p. 1-7, 2016.

C11) A. Sferlazza and L. Zaccarian, "*Linear flux observers for induction motors with quadratic lyapunov certificates*", ISIE 2016 - IEEE International Symposium on Industrial Electronics, p.p. 167-172, 2016.

C12) F. D'Ippolito, M. Massaro, and A. Sferlazza, "*An adaptive multi-rate system for visual tracking in augmented reality applications*", ISIE 2016 - IEEE International Symposium on Industrial Electronics, 2016 IEEE, p.p. 355-361, 2016.

C13) F. Alonge, F. D'Ippolito, A. Gargano, and A. Sferlazza, "*An hybrid nonlinear observer for inertial navigation*", ISIE 2016 - IEEE International Symposium on Industrial Electronics, p.p. 381-386, 2016.

C14) A. Accetta, D. Aitchison, G. Cirrincione, M. Cirrincione, M. Pucci, and A. Sferlazza, "*Sensorless induction machine drive for fly-wheel generation unit based on a TLS- based non-linear observer,*" SLED 2016 - IEEE Symposium on Sensorless Control for Electrical Drives, pp. 1–6, 2016.

C15) M. Andreetto, S. Divan, D. Fontanelli, L. Palopoli, and A. Sferlazza, "*Assistive robotic walker parameter identification for estimation of human thrust without force sensors*", RTSI 2017 - IEEE International Forum on Research and Technologies for Society and Industry, pp. 1–6, IEEE, 2017.

C16) G. Cipriani, M. Corpora, V. Di Dio, F. Di Piazza, and A. Sferlazza, "*Feedback linearization control of wind turbine equipped with doubly fed induction generator*", AEIT 2017 - IEEE International Annual Conference, pp. 1–6, 2017.

C17) A. Accetta, F. Alonge, M. Cirrincione, F. D'Ippolito, M. Pucci, and A. Sferlazza, "*GA-based off-line parameter estimation of the induction motor model including magnetic saturation and iron losses*", ECCE 2017 - IEEE Energy Conversion Congress and Exposition, pp. 2420–2426, 2017.

C18) A. Sferlazza and L. Zaccarian, "*A time-varying observer for linear systems with asynchronous discrete-time measurements*", CDC 2017 - IEEE Annual Conference on Decision and Control, pp. 1737–1742, 2017.

C19) F. Alonge, F. D'Ippolito, G. Garraffa, and A. Sferlazza, "*Hybrid observer for indoor localization with random time-of-arrival measurements*", RTSI 2018 - IEEE International Forum on Research and Technologies for Society and Industry, pp. 1–6, IEEE, 2018.

C20) A. Accetta, M. Cirrincione, M. Pucci, and A. Sferlazza, "*State space-vector model of linear induction motors including iron losses, Part I: Theoretical analysis*", ECCE 2018 - IEEE Energy Conversion Congress and Exposition, p.p. 3183-3189, 2018.

C21) A. Accetta, M. Cirrincione, M. Pucci, and A. Sferlazza, "*State space-vector model of linear induction motors including iron losses, Part II: Model identification and results*", ECCE 2018 - IEEE Energy Conversion Congress and Exposition, p.p. 3190-3197, 2018.

C22) A. Accetta, M. Cirrincione, M. Pucci, and A. Sferlazza, "*A saturation model of the synchronous reluctance motor and its identification by genetic algorithms*", ECCE 2018 - IEEE Energy Conversion Congress and Exposition, p.p. 4460-4465, 2018.

C23) A. Accetta, M. Cirrincione, M. Pucci, and A. Sferlazza, "*A space-vector state dynamic model of the synchronous reluctance motor including self and cross-saturation effects and its parameters estimation*", ECCE 2018 - IEEE Energy Conversion Congress and Exposition, p.p. 4466-4472, 2018.

ATTIVITA' SCIENTIFICHE

Reviewer for the following journals:
IEEE transaction on Automatic control
IEEE transaction on industrial electronics
IEEE transaction on Industry applications
Automatica
Control Engineering practice
Journal on nonlinear analysis: Hybrid systems.

Technical committee member for RTSI 2018 - IEEE International Forum on Research and Technologies for Society and Industry.

Reviewer for Several international conferences: CDC, ECCE, ISIE, ECC, ACC, NOLCOS, MED, ROCOND, IECON, ICEM, ELECTRIMACS, …

AMBITI DI RICERCA

His research interests include the development of feedback control algorithms for nonlinear dynamical systems, optimization techniques, estimation of stochastic dynamical systems, design of hybrid observers with asynchronous discrete-time measurements, outdoor and indoor localization systems, control of autonomous vehicles, and applications of control systems for electrical drives, power converters, and mechanical systems.

ALTRE ATTIVITA

 Competenze linguistiche

- Italiano: Madrelingua
- Inglese: Livello equivalente al B2