

MIRKO MAZZOLENI'S CURRICULUM VITAE

UPDATED: 26 MAY 2026

CURRENT POSITION

Associate professor IINF-04/A - AUTOMATICA **November 2024 - Today**
DIPARTIMENTO DI INGEGNERIA GESTIONALE, DELL'INFORMAZIONE E DELLA PRODUZIONE, UNIVERSITÀ
DEGLI STUDI DI BERGAMO, ITALY

PREVIOUS POSITIONS

Fixed-term Assistant professor (RTD-B) **November 2021 - October 2024**
DIPARTIMENTO DI INGEGNERIA GESTIONALE, DELL'INFORMAZIONE E DELLA PRODUZIONE, UNIVERSITÀ
DEGLI STUDI DI BERGAMO, ITALY

Fixed-term junior Assistant professor (RTD-A) **October 2019 - November 2021**
DIPARTIMENTO DI INGEGNERIA GESTIONALE, DELL'INFORMAZIONE E DELLA PRODUZIONE, UNIVERSITÀ
DEGLI STUDI DI BERGAMO, ITALY

Post-doctoral fellow **March 2018 - October 2019**
DIPARTIMENTO DI INGEGNERIA GESTIONALE, DELL'INFORMAZIONE E DELLA PRODUZIONE, UNIVERSITÀ
DEGLI STUDI DI BERGAMO, ITALY

INDUSTRIAL RESEARCH ACTIVITY

R&D Electronic - Software Engineer Internship **February 2014 - August 2014**
SAME DEUTZ FAHR GROUP
Developing diagnostic software for ECU in automotive field with the C programming language, using the CAN and UDS protocols. Performing integration and beta testing on the diagnostic functionalities of the machine.

EDUCATION

Ph.D. in Engineering and Applied Sciences **October 2014 - October 2017**
UNIVERSITÀ DEGLI STUDI DI BERGAMO, ITALY
Thesis title: "Learning meets control: data analytics for dynamical systems" (in English)
Advisor: Prof. Fabio Previdi, Grade: High
Reviewers: Prof. Michel Verhaegen (TU Delft, The Netherlands), Prof. Simone Garatti (Politecnico di Milano, Italy)

Master of Science in Computer Engineering **September 2011 - March 2014**
UNIVERSITÀ DEGLI STUDI DI BERGAMO, ITALY
Thesis title: "Fault detection and isolation for electromechanical actuators in aerospace application using pattern recognition methods" (in English)
Advisor: Prof. Fabio Previdi (in collaboration with UmbraGroup S.p.A.), Grade: *110/110 summa cum laude*

Bachelor of Science in Computer Engineering **September 2009 - December 2011**
UNIVERSITÀ DEGLI STUDI DI BERGAMO, ITALY
Thesis title: "Controllo in LabView di un banco motore in CC simulato" (in Italian)
Advisor: Prof. Andrea Cataldo, Grade: *106/110*

VISITING APPOINTMENTS

January-February 2020 - (1 month)

Visiting researcher at Department of Mechanical Engineering - Control Systems Technology, Eindhoven University of Technology (host: Prof. Tom Oomen).

ACADEMIC RESEARCH ACTIVITY

1. System identification algorithms

In the last decade, a cross-fertilization began between the System Identification and the Statistical Learning communities. This led firstly to the introduction of regularization techniques in system identification, and, more recently, to the application of kernel methods to dynamical systems learning. These ideas immediately became state-of-art approaches for many system identification tasks. Following this rationale, this line of research aims to leverage methodologies born under the machine learning light and employing them for system identification cause. This could also lead to new ideas and rich debate between different researchers. Methodological extensions in this area include:

- Non parametric kernel methods for system identification using semi-supervised techniques [J23] [J11] [J08] [J05] [J02] [C40] [C24] [C22] [C21] [C19] [C17] [C12] [C11] [B01] [T01];
- Non parametric kernel methods for continuous-time system identification [J06] [C25];
- Neural networks [JS01][CS01]
- Other methods [C47] [C44] [C38] [C27] [C20];

2. Fault diagnosis and condition monitoring algorithms

Fault diagnosis is an established field of control systems. However, due to the intrinsic characteristics of the processes being monitored, fault detection and health monitoring methodologies need to be adapted for the particular problem at hand. The aim of this research area is to develop fault detection and condition assessment algorithms for industrial applications, mainly via data-driven or signal-based techniques, drawing from fields such as statistics, machine learning and system identification. This field has nowadays received increased attention under various synonyms such as predictive maintenance, and it is expected to be even more important with the widespread of sensor technologies. The research activity in this area is specifically focused on:

- Fault detection and condition monitoring of electro-mechanical actuators in aerospace environment [J14] [J04] [J03] [B02] [C18] [C15] [C14] [C13] [C08] [C07] [C06] [C01];
- Maintenance of industrial machines [J22] [J19] [J16] [J12] [C37] [C35] [C31] [C29] [C28] [C26] [C18] [C03] [CS02];
- Other supervision applications [J18] [C50] [C49] [C46] [C42] [C39] [C36] [C30].

3. Other research activities (with at least one publication)

- Modeling and control of mechanical systems [C05] [C43] [C41] [C34] [C23] [C04];
- Applications of machine learning and data science [J21] [J20] [J15] [J10] [J09] [J07] [J01] [C16] [C10] [C09] [C02] ;
- Optimization [J17, J24];
- Model Predictive Control [JS01]
- Robust control [J13] [C45].
- Artificial pancreas [C32];
- Lithium batteries estimation and management [C48] [CS03].

TEACHING ACTIVITY

Lecturer

Course:	Data science e analisi dei dati sanitari (in Italian) Master
Year:	February-March 2026
School:	DAI4Health: Innovazione Digitale e Intelligenza Artificiale nel Settore Sanitario
Class Hours:	16
University:	Università di Milano-Bicocca
Course:	Adaptive Learning, Estimation and Supervision of dynamical systems (in English) M.Sc. course
Academic Year:	2025/2026
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course
Academic Year:	2025/2026
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Gestione, Analisi e Rappresentazione dei Dati (in Italian) B.Sc. course
Academic Year:	2024/2025
Class Hours per Year:	16 - 3 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Adaptive Learning, Estimation and Supervision of dynamical systems (in English) M.Sc. course
Academic Year:	2024/2025
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo

Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course
Academic Year:	2024/2025
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Gestione, Analisi e Rappresentazione dei Dati (in Italian) B.Sc. course
Academic Year:	2024/2025
Class Hours per Year:	24 - 3 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Tecnologie digitali nei servizi - data science (in Italian) Master
Year:	June 2025
School:	Servitization nel settore automotive
Class Hours:	8
University:	Università del Piemonte Orientale
Course:	Advanced methods for system identification (in English) Ph.D. course
Academic Year:	2023/2024
Ph.D. Program:	Engineering and Applied Sciences
Class Hours:	8
University:	Università degli Studi di Bergamo
Course:	Adaptive Learning, Estimation and Supervision of dynamical systems (in English) M.Sc. course
Academic Year:	2023/2024
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course
Academic Year:	2023/2024
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Gestione, Analisi e Rappresentazione dei Dati (in Italian) B.Sc. course
Academic Year:	2023/2024
Class Hours per Year:	24 - 3 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Laboratory Sustainable Industrial Systems (in English) M.Sc. course
Academic Year:	2022/2023
Class Hours per Year:	24 - 3 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Adaptive Learning, Estimation and Supervision of dynamical systems (in English) M.Sc. course
Academic Year:	2022/2023
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course
Academic Year:	2022/2023
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Tecnologie digitali nei servizi - data science (in Italian) Master
Year:	July 2023
School:	Servitization nel settore automotive
Class Hours:	8
University:	Università del Piemonte Orientale

Course:	Methods of fault diagnosis (in English) Ph.D. course
Academic Year:	2021/2022
Ph.D. Program:	Engineering and Applied Sciences
Class Hours:	12
University:	Università degli Studi di Bergamo
Course:	Advanced methods for system identification (in English) Ph.D. course
Academic Year:	2021/2022
Ph.D. Program:	Engineering and Applied Sciences
Class Hours:	20
University:	Università degli Studi di Bergamo
Course:	Tecnologie digitali nei servizi - data science (in Italian) Master
Year:	May-June 2022
School:	Servitization nel settore automotive
Class Hours:	8
University:	Università del Piemonte Orientale
Course:	Dynamic Systems Identification (in English) M.Sc. course
Academic Year:	2021/2022
Class Hours per Year:	12 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Control systems Engineering (in Italian) B.Sc. course
Academic Year:	2021/2022
Class Hours per Year:	16 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course
Academic Year:	2021/2022
Class Hours per Year:	32 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Data science and automation (in English) M.Sc. course
Academic Year:	2021/2022
Class Hours per Year:	32 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Applicazioni di predictive maintenance in ambito industriale (in Italian) Master
Academic Year:	16 October 2020
School:	SdM School of Management, Master Fabbrica Intelligente
Class Hours:	4
University:	Università degli Studi di Bergamo
Course:	Introduzione all'intelligenza artificiale, machine learning e data science (in Italian) Master
Academic Year:	18 January 2020
School:	SdM School of Management, Master Fabbrica Intelligente
Class Hours:	4
University:	Università degli Studi di Bergamo
Course:	Machine Learning in Advanced Manufacturing (in English) Summer school
Academic Year:	2020/2021
School:	China-Italy Lab on Advanced Manufacturing (CI-LAM)
Class Hours:	3
University:	Università degli Studi di Bergamo (virtual)
Course:	Advanced methods for system identification (in English) Ph.D. course
Academic Year:	2020/2021
Ph.D. Program:	Engineering and Applied Sciences
Class Hours:	20
University:	Università degli Studi di Bergamo (virtual)

Course:	Forecasting and learning for dynamic decision-making (in English, co-taught with M. Tanelli, S. Formentin, V. Breschi) Ph.D. course
Academic Year:	2020/2021
Ph.D. Program:	Data analytics and decision sciences
Class Hours:	1
University:	Politecnico di Milano (virtual)
Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course
Academic Year:	2020/2021
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Advanced methods for system identification (in English) Ph.D. course
Academic Year:	2019/2020
Ph.D. Program:	Engineering and Applied Sciences
Class Hours:	20
University:	Università degli Studi di Bergamo (virtual)
Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course
Academic Year:	2019/2020
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Data science and automation (in English) M.Sc. course
Academic Year:	2019/2020
Class Hours per Year:	32 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course
Academic Year:	2019/2020
Class Hours per Year:	32 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course
Academic Year:	2018/2019
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course
Academic Year:	2017/2018
Class Hours per Year:	48 - 6 c.f.u.
University:	Università degli Studi di Bergamo
Tutorial classes	
Course:	Dynamic system identification (in English) M.Sc. course - Teacher: Prof. A. Ferramosca
Academic Year:	2020/2021
Class Hours per Year:	12
University:	Università degli Studi di Bergamo
Course:	Control System Engineering (in Italian) M.Sc. course - Teacher: Prof. M. Ermidoro
Academic Year:	2016/2017
Class Hours per Year:	12
University:	Università degli Studi di Bergamo
Course:	Identificazione dei Modelli e Analisi dei Dati (IMAD) (in Italian) M.Sc. course - Teacher: Prof. S. Formentin
Academic Year:	2014/2015 - 2015/2016 - 2016/2017
Class Hours per Year:	12 - 12 - 12
University:	Università degli Studi di Bergamo
Industrial and other classes	

- Course: Digital technologies (in Italian)
Year: June 2024
Class Hours: **8**
Company: Arduini e Nerboldi via PIN s.c.r.l. Servizi didattici e scientifici per l'Università di Firenze
- Course: Machine learning and IoT for predictive maintenance from a sustainable perspective (in Italian)
Year: April-May 2024
Class Hours: **16**
Company: Confindustria Veneto SIAV s.r.l. Predittività e servitizzazione: fattori abilitanti della sostenibilità 1075-0002-1644- 2022 - CUP H51J23000810007 funded by Regione Veneto on DGR 1644 of 19 December 2022
- Course: A practical introduction to Artificial Intelligence (in Italian)
Year: January 2024
Class Hours: **15**
Company: Consorzio TCN s.r.l.
- Course: Predictive maintenance (in Italian)
Year: April 2022
Class Hours: **32**
Company: SALF s.p.a.
- Course: Fondamenti di automatica (in Italian)
Year: February-March 2022
Class Hours: **30**
Company: Istituto Tecnico Superiore (I.T.S.) Lombardia Meccatronica
- Course: Data science (in Italian)
Year: September 2021
Class Hours: **24**
Company: SMI group s.p.a.
- Course: Fondamenti di automatica (in Italian)
Year: April-May 2021
Class Hours: **30**
Company: Istituto Tecnico Superiore (I.T.S.) Lombardia Meccatronica
- Course: A practical introduction to Artificial Intelligence (in Italian)
Year: March 2021
Class Hours: **16**
Company: Consorzio TCN s.r.l.
- Course: Statistical signal analysis (in Italian)
Year: November 2020
Class Hours: **16**
Company: Consorzio TCN s.r.l and FCA group
- Course: Big data and machine learning (in Italian)
Year: November 2020
Class Hours: **24**
Project: Veneto region project A.G.E.: "Apprendimento, Generazioni, Evoluzione",
Cod. Prog.: 2749-0001-1315-2019
Company: Eduforma s.r.l and A&M Projects s.n.c.
- Course: Fondamenti di automatica (in Italian)
Year: June-July 2020
Class Hours: **30**
Company: Istituto Tecnico Superiore (I.T.S.) Lombardia Meccatronica
- Course: A practical introduction to Artificial Intelligence (in Italian)
Year: September 2019
Class Hours: **16**
Company: Consorzio TCN s.r.l.
- Course: A practical introduction to Artificial Intelligence (in Italian)
Year: January 2019
Class Hours: **16**
Company: Consorzio TCN s.r.l.

Ph.D. Theses Advisor or Co-Advisor

- *Control and diagnosis of servo motion systems*, Ph.D. program in Engineering and Applied Sciences, University of Bergamo. Student: G. Sonzogni, March 2026.

- *Data-driven methods for prognostics and fault detection in industrial components*, Ph.D. program in Engineering and Applied Sciences, University of Bergamo. Student: D. Cesani, May 2025.
- *Surrogate-based methods for black-box and preference-based optimization in control systems*, Ph.D. program in Engineering and Applied Sciences, University of Bergamo. Student: D. Previtali, February 2023.
- *Data-driven robust control and diagnosis: Theory and Application*, Ph.D. program in Engineering and Applied Sciences, University of Bergamo. Student: N. Valceschini, February 2023.
- *Regularized kernel-based learning for system identification*, Ph.D. program in Engineering and Applied Sciences, University of Bergamo. Student: M. Scandella, November 2019.
- *Health Monitoring of Electro-Mechanical Actuators for primary flight surfaces*, Ph.D. program in Engineering and Applied Sciences, University of Bergamo. Student: Y. Maccarana, September 2018.

M.Sc. Theses Advisor or Co-Advisor

- *Modellistica della relazione insulina-glucosio per pancreas artificiale tramite metodi di meta-learning*, M.Sc. program in Computer Engineering, University of Bergamo. Student: Rodolfi Marco. Academic Year: 2024/2025.
- *Sviluppo di un sistema di rilevamento cadute per e-bike tramite piattaforma inerziale*, M.Sc. program in Computer Engineering, University of Bergamo. Student: Cassina Andrea. Academic Year: 2024/2025.
- *Definizione di Indicatori per la caratterizzazione dello stile di guida di veicoli leggeri*, M.Sc. program in Computer Engineering, University of Bergamo. Student: Bosch Daniele. Academic Year: 2023/2024.
- *Modellistica e rilevamento di guasti parametrici per servomeccanismi con componenti elastiche*, M.Sc. program in Mechanical Engineering, University of Bergamo. Student: D. Del Prato. Academic Year: 2023/2024.
- *Vibration-based Terrain Recognition for E-Bikes Using Inertial Sensor Measurements*, M.Sc. program in Computer Engineering, University of Bergamo. Student: C. Gambirasio. Academic Year: 2023/2024.
- *Application of adaptive system identification methods in fault diagnosis problems*, M.Sc. program in Computer Engineering, University of Bergamo. Student: A. Arici. Academic Year: 2023/2024.
- *Data selection algorithms in adaptive system identification and fault diagnosis*, M.Sc. program in Computer Engineering, University of Bergamo. Student: F. Corrini. Academic Year: 2023/2024.
- *Development and Implementation of an Integrated Condition Monitoring System for Industrial Maintenance*, M.Sc. program in Computer Engineering, University of Bergamo. Student: G. Cantoni. Academic Year: 2023/2024.
- *Diagnosi dei guasti di attuatori elettromeccanici montati su ante a battenti*, M.Sc. program in Computer Engineering, Università degli Studi di Bergamo. Student: S. Locatelli. Academic Year: 2022/2023.
- *Controller Redesign Methods for Fault-Tolerant Control*, M.Sc. program in Computer Engineering, University of Bergamo. Student: T. Foster. Academic Year: 2022/2023.
- *Evaluation of CNN models for the aerial image detection: an approach with zero/one-shot and few-shot techniques learning*, M.Sc. program in Computer Engineering, University of Bergamo. Student: E. Toffolatti. Academic Year: 2022/2023.
- *Identificazione di sistemi dinamici con metodi kernel e tecniche di graph learning*, M.Sc. program in Computer Engineering, University of Bergamo. Student: P. Boni. Academic Year: 2021/2022.
- *Diagnosi robusta dei guasti tramite approcci model-based e applicazione ad un attuatore aerospaziale*, M.Sc. program in Mechanical Engineering, Università degli Studi di Bergamo. Student: D. Crippa. Academic Year: 2020/2021.
- *Mixed-sensitivity oriented regularization for linear system identification*, M.Sc. program in Management Engineering, University of Bergamo. Student: G. Vedovati. Academic Year: 2020/2021.
- *Progettazione di un metodo di rilevazione dei guasti con approccio data-driven basato su identificazione ai sottospazi (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: G. Viganó. Academic Year: 2020/2021.
- *Diagnosi di guasti per cuscinetti a sfera con metodi di Compressed Sensing (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: N. Belotti. Academic Year: 2019/2020.
- *Modellistica e diagnosi dei guasti di un attuatore elettromeccanico per superfici secondarie di controllo del volo (in Italian)*, M.Sc. program in Mechanical Engineering, University of Bergamo. Students: E. Jacobelli, A. Cordoni. Academic Year: 2019/2020.

- *Metodi di riduzione dimensionale per la stima non parametrica e per la classificazione di particelle leggere (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: G. Dantoni. Academic Year: 2018/2019.
- *Sviluppo e validazione sperimentale di algoritmi di manutenzione predittiva per macchine soffiatrici (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: J. Ghisalberti. Academic Year: 2018/2019.
- *Sviluppo e validazione di un metodo di diagnosi e monitoraggio dei guasti per centri di lavoro ad alte prestazioni (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: L. Pitturelli. Academic Year: 2018/2019.
- *Sviluppo sperimentale di un metodo model-based di diagnosi dei guasti per attuatori elettromeccanici in ambito aerospaziale (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: S. Giusso. Academic Year: 2018/2019.
- *Identificazione e sintesi di Dynamic Texture attraverso approcci data-driven (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Students: D. Previtali, N. Valceschini. Academic Year: 2018/2019.
- *Algoritmi di Health Monitoring per la manutenzione predittiva di attuatori elettromeccanici di aeromobili (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: A. Russo. Academic Year: 2017/2018.
- *Modeling and identification of a hydraulic thermoforming press for advanced parallelism control (in English)*, M.Sc. program in Mechanical Engineering, University of Bergamo. Student: L. Covelli. Academic Year: 2017/2018.
- *Identificazione Semisupervisionata per modelli NARX (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: G. Bergamelli. Academic Year: 2016/2017.
- *Progettazione e sviluppo di un software per l'archiviazione e l'interrogazione di dati genetici (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: V. Uberti, A. Hu. Academic Year: 2016/2017.
- *Identificazione Semisupervisionata di modelli N-FIR (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: M. Scandella. Academic Year: 2015/2016.
- *Sviluppo di un algoritmo non supervisionato per l'estrazione delle emozioni fondamentali da dati testuali (in Italian)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: G. Breviaro. Academic Year: 2015/2016.
- *Modeling, identification and control of a test bench for fault detection of aeronautical electro-mechanical actuators (in English)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: Y. Maccarana. Academic Year: 2014/2015.
- *Recommender systems for digital magazines: algorithms analysis and design (in English)*, M.Sc. program in Computer Engineering, University of Bergamo. Student: D. Servalli. Academic Year: 2014/2015.

ACADEMIC ROLES

- Board member of the Ph.D. course in *Artificial Intelligence for Sustainable Futures*, University of Bergamo (April 2025-Today).
- Member of the department council (April 2025-Today).
- Member of the department team following the European Factories of the Future Research Association (EFFRA) activities (2024-Today).
- Orientation delegate for the Computer Engineering bachelor and master degrees (2023-Today).
- President of the scientific committee of the engineering library (2022-2026).

PARTICIPATION IN REGIONAL, NATIONAL AND INTERNATIONAL RESEARCH PROJECTS

- *HARMONY: Human-Assisted Robotic Manufacturing for Optimized New Yield*
Period: 2025 - 2027
Funded by: **Regione Lombardia - Collabora e Innova PR FESR 2021-2027**.
Role: Contribution to research on PLC in industrial metaverse.

- *KOIOS: Knowledge Extraction, Machine Learning and other AI approaches for secure, robust, frugal, resilient and explainable solutions in Defence Applications* - EDF-2021-DIGIT-R-FL-KOIOS
 Period: 1/2022 - 4/2026. (36 months)
 Total budget: 9.98 M€ - UniBg budget: 353k€
 Partners (14): CT Ingenieros aeronauticos de automocion e industriales sl (coordinator - Spain), Applied intelligence analytics (Ireland), Barcelona supercomputing centre - centro nacional de supercomputacion (Spain), Foundation fOr Research and Technology Hellas (Greece), Laboratoire national de metrologie et d'essais (France), Mitiga solutions sl (Spain), NTT data Spain (Spain), Office national d'etudes de recherches Aeronautiques (France), Stichting maritiem research instituut Nederland (Netherlands), Technische universiteit Eindhoven (Netherlands), Totalforsvarets forskningsinstitut (Sweden), Università degli Studi di Bergamo (Italy), Universitaet der Bundeswehr Muenchen (Germany), Vocapia (France).
 Funded by: **European Union. European Defence Fund (EDF) 2021**. Call: EDF-2021-2021-DIGIT-R: Artificial intelligence. Topic title: EDF-2021-DIGIT-R-FL: Frugal learning for rapid adaptation of AI methods.
 Role: **Principal Investigator** of the University of Bergamo activities.
- *ANTHEM: Advanced Technologies for Human-centred Medicine*
 Period: 2022 - Today.
 Funded by: **Italy Minister of University and Research (MUR)**. Piano Nazionale per gli investimenti complementari al PNRR (PNC0000003).
 Role: **Principal Investigator of Pilot 1.1 (Leveraging data for clinical support systems and data management) of the Spoke 1 (Data and technology driven diagnoses and therapies)**. Joint responsibility of the Pilot 1.1 together with Fabio Stella (University of Milan-Bicocca) and Anna Caroli (Head of the Medical Imaging Laboratory of the Bioengineering Department, Istituto di Ricerche Farmacologiche Mario Negri IRCCS, Bergamo, Italy).
- *MOST: National center for sustainable mobility*
 Period: 2022 - 2025.
 Funded by: **Italy National Recovery and Resilience Plan, Next Generation EU**. Piano Nazionale Ripresa e Resilienza (PNRR).
 Role: **Principal Investigator of WP 1.3 (User behaviours) of the Spoke 5 (Active mobility and light vehicles)**.
- *SLIM: Smart Living in Manufacturing*
 Period: 2021 - 2024.
 Funded by: **Regione Lombardia**. Program interventions for economic recovery.
 Role: Criticality identification and possible HW and SW solutions for sensor and virtual machine interfacing. Literature analysis for definition of problems and possible solutions within the scope industrial diagnostics for automated production lines.
- *REPRISE: Reliable Electro-mechanical actuator for Primary Surface with health monitoring*
 Period: 7/2016 - 2021.
 Total budget: 995k€ - UniBg budget: 263k€
 Partners: Piaggio Aerospace s.p.a., UmbraGroup s.p.a, Zettlex l.t.d., Università degli Studi di Bergamo.
 Funded by: **European Union (H2020)** Clean Sky 2 Joint Technology Initiative.
 Role: Research in the Work Packages WP3 - Test Phase I; WP4 - Failure prevention technology selection.
- *HOLMES: Health On Line Monitoring for Electromechanical actuator Safety*
 Period: 1/2014 - 12/2016.
 Total budget: 490k€ - UniBg budget: 136k€
 Partners: Liebherr Aerospace GmbH, UmbraGroup s.p.a., Università degli Studi di Bergamo.
 Funded by: **European Union (FP7)** Clean Sky Joint Technology Initiative.
 Role: Research in the Work Packages WP4 - Modeling approach; WP5 - Realization of health monitoring software.
- *Health monitoring of an axis of an industrial CNC machining*
 Period: 06/2018 - 7/2019.
 Partners: Mandelli s.p.a., UmbraGroup s.p.a., Università degli Studi di Bergamo.
 Funded by: **Italian Ministry for the Economic Development (MiSE)**.
- *WATCHMAN: Workload-reduction machine vision-based Technology Hub for Manufacturing*
 Period: 02/2020 - 2022.
 Total budget: 6.601.061€ - UniBg budget: 1.106.000€
 Partners: Consorzio Intellimech, Brembo s.p.a., Fincons Group, Salf s.p.a. Laboratorio Farmacologico, Smart Robots s.r.l., SorintLab s.p.a., Università degli Studi di Bergamo, Vision s.r.l.
 Funded by: **Regione Lombardia**.
 Role: Investigation of the state of the art and implementation of machine vision algorithms for detecting faults in mechanical components.
- *SMART4CPPS: Smart Solutions for Cyber-Physical Production Systems*
 Period: 04/2018 - October 2020.

Total budget: 7405k€ - UniBg budget: 694k€

Partners: C.M.S. Costruzioni macchine speciali s.p.a., Ratti s.p.a., Scaglia Indeva s.p.a., Quantra s.r.l., Porta Solutions s.p.a., Cavagna Group (OMECA), Camozzi s.p.a., Balance Systems s.r.l., TXT e-Solutions s.p.a., Fincons s.p.a., Politecnico di Milano, Consiglio Nazionale delle Ricerche - Istituto di Tecnologie Industriali e Automazione, Università degli Studi di Bergamo, Università degli Studi di Brescia.

Funded by: **Regione Lombardia**.

Role: Research in the Pilot 1 - Design of Health monitoring algorithms for linear actuators and fluid valves.

- *ADAPTIVE: A modular and adaptive approach to the design of digital factories.*
Period: 11/2015 - 01/2017.
Partners: Cosberg s.p.a., Scaglia Indeva s.p.a., Masmec s.p.a., Balluff Automation s.r.l., Copan Group s.p.a., Università degli Studi di Bergamo, Università degli Studi di Brescia, Consorzio Intellimech.
Funded by: **Italian Ministry for the Instruction, University and Research (MIUR)**.
Role: Development of manufacturing fault diagnostics methods using model-free and machine learning methodologies.
- *SMART LIVING 4 ALL: Improving safety at home for children and elderly*
Period: 11/2017 - 5/2019.
Total budget: 1237k€ - UniBg budget: 293k€
Partners: ComfTech s.r.l., Mediaclinics s.r.l., Foppapedretti s.p.a., Università degli Studi di Bergamo.
Funded by: **Regione Lombardia**.
Role: Implementation of the crying analysis algorithm for babies with Tensorflow technology.
- *INTERNET OF BEAUTY: Products for customizable, intelligent, safe and ecological beauty-care*
Period: 11/2017 - 5/2019.
Total budget: 1125K€
Partners: Tenacta Group s.p.a., FAE Technology s.p.a., Consorzio Intellimech, Università degli Studi di Bergamo.
Funded by: **Regione Lombardia**.
Role: Support for the development of prototypes and the algorithm for assigning appliance configuration parameters.

RESEARCH GRANTS OWNER

- *REVIVE: Repurposing Electric Vehicle lithium-Ion batteries for Versatile Energy storage.* Funded by: University of Bergamo, 8.000,00 €, 2025.
- *Leveraging uncertainty quantification for robust control and fault detection.* Funded by: Department of Management, Production and Information Engineering, University of Bergamo, 20.180,44 €, 2024.
- *New methods in system identification and control using machine learning techniques.* Funded by: Department of Management, Production and Information Engineering, University of Bergamo, 13.946,34 €, 2021.

EDITORIAL ACTIVITY

International journals

- Journal: *IFAC Journal of Systems and Control*.
Editor: Elsevier.
Special issue: System Identification (2027).
Website: <https://www.sciencedirect.com/special-issue/331949/recent-topics-in-system-identification-1>
Role: Guest Editor.

International conferences

- *IEEE Control Editorial Board (CEB)*.
Period: Since August 2023.
Role: Associate editor for IEEE Control Systems Society (CSS) conferences.
- *International Conference on Mechanics, Mechatronics, Materials and Civil Engineering 2022 (3MCE'2022)*.
Period: Tetouan, Morocco, September 10, 2022.
Role: member of the scientific committee.

Reviews

I served as a reviewer for the journals *Automatica*, *Mechatronics*, *Control Engineering Practice*, *Engineering Applications of Artificial Intelligence*, *Computers in Industry*, *System and Control Letters*, *Medical Engineering and Physics*, *International Journal of Robust and Nonlinear Control*, *International Journal of Adaptive Control and Signal Processing*, *Optimal Control, Applications and Methods*, *IEEE Transactions on Automatic Control*, *IEEE Transactions on Industrial Electronics*, *IEEE Transactions on Instrumentation and Measurement*, *IEEE Control Systems Letters*, *IEEE Transactions on Control Systems Technology*, *Mechanical Systems and Signal Processing* and for several IFAC/IEEE conferences.

TECHNOLOGICAL TRANSFER ACTIVITIES

Industrial collaborations

- *Tuning of PID controllers for the process industry*, within a research project between Università degli Studi di Bergamo and Gefran s.p.a. (Provaglio d'Iseo - BG, Italy), 2026.
- *Filtering and estimation methods for brake kits*, within a research project between Università degli Studi di Bergamo and Brembo s.p.a. (Curno - BG, Italy), 2026.
- *Diagnosis and monitoring of circuit-breakers components*, within a research project between Università degli Studi di Bergamo and ABB s.p.a. (Bergamo, Italy), 2026. **Responsible of the research contract.**
- *Analysis, characterization, validation of a sensor for measuring the moisture content of the paper at the end of the impregnation line.*, within a research project between Università degli Studi di Bergamo and Neodecortech s.p.a. (Filago - BG, Italy), 2025. **Responsible of the research contract.**
- *Sensorization, acquisition and analysis of the characteristic signals of a specific polymer injection molding machine equipped with a specific mold, with particular reference to the cooling system of the mold itself.*, within a research project between Università degli Studi di Bergamo and Lovato Electric s.p.a. (Bergamo - BG, Italy), 2024. **Responsible of the research contract.**
- *Development of methods and algorithms for fault detection on components of a Tesmec stringing machine*, within a research project between Università degli Studi di Bergamo and Tesmec s.p.a. (Bergamo - BG, Italy), 2024. **Responsible of the research contract.**
- *Descriptive analysis of energy stringing machines for fault diagnosis*, within a research project between Università degli Studi di Bergamo and Tesmec s.p.a. (Bergamo - BG, Italy), 2023. **Responsible of the research contract.**
- *Descriptive analysis of alarms and stop reasons for a shrinkwrapper machine*, within a research project between Università degli Studi di Bergamo and SmiGroup s.p.a. (San Giovanni Bianco - BG, Italy), 2022. **Responsible of the research contract.**
- *Leak detection algorithms for a smart valve prototype*, within a research project between Università degli Studi di Bergamo and Reetronics s.r.l. (Seriate - BG, Italy), 2022-Today. **Responsible of the research contract.**
- *Design of a control system for blood extractor devices*, within a research project between Università degli Studi di Bergamo and Delcon s.r.l. (Grassobbio - BG, Italy), 2020-Today.
- *Predictive Maintenance System for beverage packaging machines*, within a research project between Università degli Studi di Bergamo and SmiGroup s.p.a. (San Giovanni Bianco - BG, Italy), 2018-2020.
- *Evaluation of computational burden for CNC trajectory planning algorithms*, within a research project between Università degli Studi di Bergamo and DDX s.r.l. (Brembate Sopra - BG, Italy), 2018.
- *Development of a methodological procedure for tuning the control system of a thermoforming press*, within a research project between Università degli Studi di Bergamo and Persico s.p.a. (Nembro - BG, Italy), 2017.
- *Estimation of sliding gates mass using inertial sensors and motor measurements*, within a research project with Università degli Studi di Bergamo and BFT s.p.a. (Schio - VI, Italy), 2017.
- *Fault detection of strand ropes via image processing techniques*, within a research project between Università degli Studi di Bergamo and Vinati s.r.l. (Nave - BS, Italy), 2017.
- *Estimation of sliding gates position using inertial sensors*, within a research project between Università degli Studi di Bergamo and BFT a.p.a. (Schio - VI, Italy), 2016.
- *Technological scouting of range finder sensors*, within a research project between Università degli Studi di Bergamo and BFT s.p.a. (Schio - VI, Italy), 2016.
- *Advanced business analytics with system identification techniques*, within a research contract between Politecnico di Milano, E-Novia s.p.a. (Milan, Italy) and Pastificio Rana s.p.a. (Verona - Italy), 2015.

- *Development of a recommender system for digital kart articles*, within a research contract between University of Bergamo and E-Novia s.p.a. (Milan, Italy), 2015.
- *Development of drug craving therapy algorithm with brain-computer interfaces*, within a research contract between University of Bergamo and Relazione Impresa Sociale s.r.l. (Milan, Italy), 2015.

Research contracts

- *Development of health monitoring algorithms for predictive maintenance*, research project: SMART4CPPS, 2018.
- *Preliminary development of change-point detection algorithms in fault diagnostics*, funded by: Centro di Ateneo per la Gestione dell'Innovazione e del Trasferimento Tecnologico (GITT), Università degli Studi di Bergamo, 2018.
- *Support to the execution of the tests at Umbra Cuscinetti*, Foligno, research project: REPRISE, 2017.
- *Development of model-free diagnostic methods with application to mechatronic devices*, research project: Adaptive and Modular Approaches for the Digital enabled factory, 2016.

Entrepreneurial activity

- *Co-founder of the AISent s.r.l. company*. The company has the mission to create impactful solutions for the industry through technology. Website: <https://aisent.io/>, March 2018.

SCIENTIFIC EVENTS

Invited talks

- *Nonparametric system identification with manifold regularization*. TIGRECO Workshop, PRIN 2022 project “Time-varying signals on graphs: real and complex methods”, University of Bergamo, Bergamo, Italy, April 15, 2024,
- *Fault diagnosis strategies for the design and maintenance of industrial products*. Higher Polytechnic School University of Seville, Seville, Spain, October, 28 2021.
- *Designing diagnostic algorithms for reliable electromechanical flight actuators on more electric aircrafts*. VIII conference of R + D + i and V conference of the doctorate program in Installations and Systems for Industry (course 2021/22) Higher Polytechnic School, University of Seville, Seville, Spain, October 18, 2021.

Organization

- Special session “Safety in Autonomous Systems: from Fault Detection to Fault Prognosis” at the 20th IEEE International Conference on Automation Science and Engineering (CASE 2024). Organizers: Alessandro Freddi, Alessandro Baldini, Riccardo Felicetti, Silvio Simani, Mirko Mazzoleni.
- Invited session “Intelligent Data-driven Fault Diagnosis, Prognostics and Health Aware Control” at the 22nd IFAC World Congress, Yokohama, Japan, 2023. Organizers: Mirko Mazzoleni, Silvio Simani, Mayank Shekhar Jha, Jacques Noom, Horst Schulte, Michel Verhaegen, Didier Theilliol.

Presentation at international conferences/workshops

- 20th IFAC Symposium on System Identification (SYSID), 17-18 July, 2024, Boston, USA.
- 12th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes (SAFEPROCESS), Ferrara, Italy, June 4-7, 2024. **Winner (first place) of the competition “LiU-ICE Industrial Fault Diagnosis Benchmark”**. Team: Anselmi Nicholas, Andrea Arici, Francesco Corrini, Mirko Mazzoleni. Role in the team: supervision of the activities. Organizers of the competition: Daniel Jung, Erik Frisk, Mattias Krysander, Linköping University, Sweden.
- 19th IFAC Symposium on System Identification (SYSID), 2021 (virtual).
- 21st IFAC World Congress, 2020 (virtual).
- 17th EUCA European Control Conference (ECC), May 12-15, 2020 (virtual).
- 13th IFAC Workshop on Adaptive and Learning Control Systems (ALCOS), Winchester, UK, December 4-6, 2019.
- 27th ERNSI Workshop, Maastricht, The Netherlands, September 22-25, 2019.
- 57th IEEE Conference on Decision and Control (CDC), Miami Beach, Florida, December 17-19 2018.
- 26th ERNSI Workshop, Cambridge, UK, September 23-26, 2018.
- 2nd IEEE Conference on Control Technology and Applications (CCTA), Copenhagen, Denmark, 2018.
- 18th IFAC Symposium on System Identification (SYSID), Stockholm, Sweden, July 9-11, 2018.
- 26th Mediterranean Conference on Control and Automation (MED), Zadar, Croatia, June 19-22, 2018.
- 16th EUCA European Control Conference (ECC), Limassol, Cyprus, June 12-15, 2018.

- 3rd Nonlinear System Identification Benchmarks Workshop, Liege, Belgium, April 9-13, 2018.
- 20th IFAC World Congress, Toulouse, France, July 9-14, 2017.
- IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), Munich, Germany, July 3-7, 2017.
- 42nd IEEE Industrial Electronics society annual CONFERENCE (IECON), Florence, Italy, October 24-26, 2016.
- 9th IFAC Symposium on Biological and Medical Systems (BMS), Berlin, Germany, August 31-Sept. 2, 2015

Presentation to national conferences/workshops

- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), virtual conference (Catania), September 8-10, 2023.
- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), virtual conference (Cagliari), September 9-11, 2022.
- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), Ancona, Italy, September 11-13, 2019.
- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), Florence, Italy, September 12-14, 2018.
- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), Milan, Italy, September 11-13, 2017. **Second place for best poster presentation.**
- Annual Conference of the Italian Society of Teachers and Researchers in Automatic Control (S.I.D.R.A.), (Attendance), Bergamo, Italy, September 8-10, 2014.

PUBLIC ENGAGEMENT ACTIVITIES

- *Forme e utilizzi dell'intelligenza artificiale in ambito tecnico e creativo*. Organizers: Circolo ACLI Dalmine, rassegna "Molte fedi sotto lo stesso cielo", 31 March 2025, Dalmine, BG (Italy).
- *Artificial intelligence: support or obstacle to creativity?*. Event: Artificial Intelligence, opportunities and risks. Organizers: Department of Management Engineering, of Information and Production of the University of Bergamo in collaboration with the "Ateneo di Scienze Lettere e Arti" of Bergamo, 27 March 2024, Bergamo (Italy).

PUBLICATIONS

International journals

- [JS02] De Carli, S., Previtali D., Mazzoleni, M., Previdi, F.
Stability properties of Minimal Gated Unit neural networks.
Submitted to Automatica, 2026.
- [JS01] M. Polver, D. Limon, M. MAZZOLENI, F. Previdi, A. Ferramosca
Robust contractive model predictive control based on Gaussian Processes.
Submitted to International Journal of Robust and Nonlinear Control, 2025.
- [J25] A. Raimondi, G. Savino, N. Baldanzini, J. Lagrimino, S. Viciani, G. Biagioni, J. Leoni, M. MAZZOLENI, D. Previtali, L. Gaioni, M. Minervini
A systematic approach to enhance road safety of electric pedal-assisted vehicles for future urban mobility
Book chapter in "The Future of Slow Mobility: A Review on Design, Planning and Ethical Aspects of E-Bikes", DOI: 10.1007/978-3-032-23660-9_9.
- [J24] D. Previtali, M. MAZZOLENI, N. Valceschini, F. Previdi
A general surrogate-based optimization algorithm for problems with computationally-expensive constraints with application to μ -synthesis control design.
ISA Transactions, 2026, DOI: 10.1016/j.isatra.2026.03.047.
- [J23] P. Boni, M. MAZZOLENI, M. Scandella, F. Previdi
A graph learning approach for kernel-based system identification with manifold regularization.
Journal of Franklin Institute, 2025, DOI: 10.1016/j.jfranklin.2025.107793.
- [J22] D. Jung, E. Frisk, M. Krysander, A. Sztyber, F. Corrini, A. Arici, N. Anselmi, M. MAZZOLENI, J. Xu, S. Mo, Z. Xu, C. Yang, Z. Du, H. Safaeipour, M. Forouzanfar, V. Mirahi, A. Pinnarelli, V. Puig, Q. Deng, Y. Liu, J. Liu, H. Ke, W. Zhu, S. Merkelbach, M. Ahang, H. Najjaran
A fault diagnosis benchmark of technical systems with incomplete data - six solutions.
Control Engineering Practice, vol. 164, 2025, DOI: 10.1016/j.conengprac.2025.106427.
- [J21] A. Luque, D. Campos Olivares, M. MAZZOLENI, A. Ferramosca, F. Previdi, A. Carrasco
Use of artificial intelligence techniques in characterization of vibration signals for application in agri-food engineering.
Applied Intelligence, vol. 55, 2025, DOI: 10.1007/s10489-025-06424-2.

- [J20] A. Luque, M. MAZZOLENI, A. de Las Heras, A. Ferramosca, F. Previdi and A. Carrasco
The Role of Kano Model in Revealing the Most Significant Physicochemical Properties of Wines.
IEEE Access, vol. 12, pp. 169733-169747, 2024, DOI: 10.1109/ACCESS.2024.3492385.
- [J19] M. MAZZOLENI
Design of supervision solutions for industrial equipment: Schemes, tools and guidelines for the user.
Journal of Industrial Information Integration, vol. 41, pp. 100667 (23 pages), 2024. DOI: 10.1016/j.jii.2024.100667.
- [J18] L. Maurelli, M. MAZZOLENI, A. Camisani, F. Previdi
Physics-informed Remaining Useful Life estimation of cost-effective solenoid valves using significant points of the excitation current.
ASME Journal of Dynamic Systems, Measurement and Control, vol. 146, n. 3, pp. 031007 (11 pages), 2024. DOI: 10.1115/1.4064602.
- [J17] D. Previtali, M. MAZZOLENI, A. Ferramosca, F. Previdi
GLISp-r: A preference-based optimization algorithm with convergence guarantees.
Computational Optimization and Applications, vol. 86, pp. 383-420, 2023. DOI: 10.1007/s10589-023-00491-2.
- [J16] D. Campos, A. Carrasco-Muñoz, M. MAZZOLENI, A. Ferramosca, A. Luque.
Screening of Machine Learning Techniques on Predictive Maintenance: a Scoping Review.
DYNA, vol. DYNA-ACELERADO(0). DOI: 10.6036/10950.
- [J15] A. Luque, M. MAZZOLENI, F. Zamora-Polo, A. Ferramosca, J. R. Lama and F. Previdi
Determining the Importance of Physicochemical Properties in the Perceived Quality of Wines.
IEEE Access, vol. 11, pp. 115430-115449, 2023. DOI: 10.1109/ACCESS.2023.3325676.
- [J14] P. Boni, M. MAZZOLENI, F. Previdi
Robust data-driven design of a jamming detection filter for airborne electromechanical actuators.
European Journal of Control, pp. 100926, 2023. DOI: 10.1016/j.ejcon.2023.100926.
- [J13] N. Valceschini, M. MAZZOLENI, S. Formentin, F. Previdi
Data-driven mixed-sensitivity control with automated weighting functions selection.
International Journal of Robust and Nonlinear Control, 2023. DOI: 10.1002/rnc.6579.
- [J12] M. MAZZOLENI, K. Sarda, A. Acernese, L. Russo., L. Manfredi, L. Glielmo, C. Del Vecchio
A fuzzy logic-based approach for fault diagnosis and condition monitoring of industry 4.0 manufacturing processes.
Engineering Applications of Artificial Intelligence, vol. 115, pp. 105317, 2022. DOI: 10.1016/j.engappai.2022.105317.
- [J11] M. MAZZOLENI, A. Chiuso, M. Scandella, S. Formentin, F. Previdi
Kernel-based system identification with manifold regularization: a Bayesian perspective.
Automatica, vol. 142, pp. 110419, 2022, ISSN: 0005-1098. DOI: 10.1016/j.automatica.2022.110419.
- [J10] A. Cattaneo, A. Vitali, M. MAZZOLENI, F. Previdi
An agent-based model to assess large-scale COVID-19 vaccination campaigns for the Italian territory: the case study of Lombardy region.
Computer Methods and Programs in Biomedicine, vol. 224, pp. 107029, 2021, ISSN: 0169-2607. DOI: 10.1016/j.cmpb.2022.107029.
- [J09] A. Luque, M. MAZZOLENI, A. Carrasco, A. Ferramosca
Visualizing Classification Results: Confusion Star and Confusion Gear.
IEEE Access, vol. 10, pp. 1659-1677, 2022. DOI: 10.1109/ACCESS.2021.3137630.
- [J08] M. MAZZOLENI, G. Maroni, S. Formentin, F. Previdi
A kernel-based control approach for multi-period assets allocation based on lower partial moments
Engineering Applications of Artificial Intelligence, vol. 110, 2022, ISSN 0952-1976. DOI: 10.1016/j.engappai.2021.104659.
- [J07] N. Valceschini, M. MAZZOLENI, F. Previdi
Inertial load classification of low-cost electro-mechanical systems under dataset shift with fast end of line testing.
Engineering Applications of Artificial Intelligence, vol. 105, ISSN 0952-1976, 2021. DOI: 10.1016/j.engappai.2021.104446.
- [J06] M. Scandella, M. MAZZOLENI, S. Formentin, F. Previdi
Kernel-based identification of asymptotically stable continuous-time linear dynamical systems.
International Journal of Control, 2020. DOI: 10.1080/00207179.2020.1868580.
- [J05] M. Scandella, M. MAZZOLENI, S. Formentin, F. Previdi
A note on the numerical solutions of kernel-based learning problems.
IEEE Transactions on Automatic Control, 2019. DOI: 10.1109/TAC.2020.2989769.

- [J04] M. MAZZOLENI, M. Scandella, F. Previdi, G. Pispola
Data on the first endurance activity of a Brushless DC motor for aerospace applications.
Data in Brief, 2020. DOI: 10.1016/j.dib.2020.105153. ISSN: 2352-3409.
- [J03] M. MAZZOLENI, M. Scandella, F. Previdi, G. Pispola
Experimental development of a Health Monitoring method for Electro-Mechanical Actuators of flight control primary surfaces in More Electric Aircrafts.
IEEE Access, 2019, vol. 7, pp. 153618-153634. DOI: 10.1109/ACCESS.2019.2948781. ISSN: 2169-3536.
- [J02] S. Formentin, M. MAZZOLENI, M. Scandella, F. Previdi
Nonlinear system identification via data augmentation.
Systems & Control Letters, 2019. DOI: 10.1016/j.sysconle.2019.04.004. ISSN: 0167-6911.
- [J01] M. MAZZOLENI, F. Previdi, S. Bonfiglio
Classification algorithms analysis for brain-computer interface in drug craving therapy.
Biomedical Signal Processing and Control, 2019. DOI: 10.1016/j.bspc.2017.01.011. ISSN: 1746-8094.

Books

- [B02] M. MAZZOLENI, G. Di Rito, F. Previdi
Electro-Mechanical Actuators for the More Electric Aircraft: Condition Monitoring and Fault Diagnosis applications.
In Advances in Industrial Control, Springer International Publishing, 2021, ISBN-13: 978-3-030-61799-8, DOI: 10.1007/978-3-030-61799-8.
- [B01] M. MAZZOLENI
Learning meets control: data analytics for dynamical systems
Bruno Mondadori editor, 2018, ISBN-13: 978-8867741632

International conferences

Steel wire rope fault detection via 1D convolutional neural networks

- [CS03] Corrini, F., Fagiani, L., Previtali D., Mazzoleni, M., Previdi, F.
Efficient Linear Parameter Varying Identification of the Equivalent Circuit Model of Lithium-Ion Batteries .
Submitted to 23rd IFAC World Congress, Busan, South Korea.
- [CS02] Sonzogni, G., De Carli, S., Previtali D., Mazzoleni, M., Previdi, F.
Steel wire rope fault detection via 1D convolutional neural networks.
Submitted to 23rd IFAC World Congress, Busan, South Korea.
- [CS01] De Carli, S., Previtali D., Mazzoleni, M., Previdi, F.
Stability properties of Minimal Gated Unit neural networks.
Joint Submission to IEEE Control Systems Letters and 65th IEEE Conference of Decision and Control, Honolulu, Hawaii, 2026.
- [C50] F. Corrini, M. MAZZOLENI, M. Scandella, F. Previdi
MPC based anomaly detection of vessel routes using AIS data.
6th International Conference on Control and Fault-Tolerant Systems (SYSTOL), 2025, Ayia Napa, Cyprus.
- [C49] F. Corrini, M. MAZZOLENI, M. Scandella, F. Previdi
A novel quadratic entropy classifier for fault detection and isolation with application to the LiU-ICE benchmark.
6th International Conference on Control and Fault-Tolerant Systems (SYSTOL), Ayia Napa, 2025, Cyprus.
- [C48] D. Previtali, D. Masti, M. MAZZOLENI, F. Previdi
A virtual sensor fusion approach for state of charge estimation of lithium-ion cells.
51th IEEE Industrial Electronics society CONFERENCE (IECON), Madrid, Spain, 2025.
- [C47] F. Corrini, M. MAZZOLENI, M. Scandella, F. Ferracuti, L. Cavanini, F. Previdi
A quadratic entropy algorithm for efficient online identification of LPV-ARX models using LS-SVM.
Joint 11th IFAC Symposium on Robust Control Design (ROCOND) and 6th IFAC Workshop on Linear Parameter Varying Systems (LPVS'25), Porto, Portugal, 2025.
- [C46] D. Cesani, N. Valceschini, M. MAZZOLENI, A. Ferramosca, F. Previdi
Energy power grid three-phase signal estimation and fault detection for electric vehicles.
23rd European Control Conference (ECC), Thessaloniki, Greece, 2025.
- [C45] D. Previtali, M. MAZZOLENI, N. Valceschini, F. Previdi
Data-driven mixed-sensitivity structured control of SISO multi-model systems with application to a reconfigurable industrial oven.
23rd European Control Conference (ECC), Thessaloniki, Greece, 2025.

- [C44] S. De Carli, D. Previtalli, L. Pitturelli, M. MAZZOLENI, A. Ferramosca, F. Previdi
Infinity-norm-based Input-to-State-Stable Long Short-Term Memory networks: a thermal systems perspective. 23rd European Control Conference (ECC), Thessaloniki, Greece, 2025.
- [C43] G. Sonzogni, R. González, K. Tiels, M. MAZZOLENI, T. Oomen, F. Previdi
Motion control tuning for time-delayed systems with integral action. Joint 10th IFAC Symposium on Mechatronic Systems and 14th Symposium on Robotics, Paris, France, 2025.
- [C42] P. A. Mongini, M. MAZZOLENI, A. Ferramosca, L. Magni, C. Toffanin
A meal detection approach based on parity space to detect untreated meals in subjects with Type 1 diabetes. 63rd IEEE Conference on Decision and Control (CDC), Milan, Italy, 2024.
- [C41] G. Sonzogni, M. MAZZOLENI, M. Polver, A. Ferramosca, F. Previdi
An explicit expression of the steady-state error in Smith Predictor applied to linear systems with integral action. 18th IFAC Workshop on Time Delay Systems (TDS), Udine, Italy, 2024. IFAC-PapersOnline 58 (27), pp. 43-48, 2024. DOI: 10.1016/j.ifacol.2024.10.297
- [C40] D. Previtalli and M. Scandella and L. Pitturelli and M. Mazzoleni and A. Ferramosca and F. Previdi
Continuous-time identification of grey-box and black-box models of an industrial oven. 20th IFAC Symposium on System Identification (SYSID), Boston, USA, IFAC-PapersOnline 58 (15), pp. 175-180, 2024. DOI: 10.1016/j.ifacol.2024.08.524.
- [C39] F. Corrini and M. MAZZOLENI and F. Ferracuti and L. Cavanini and F. Previdi
An information theory approach for recursive LPV-ARX model identification via LS-SVM. 20th IFAC Symposium on System Identification (SYSID), Boston, USA, IFAC-PapersOnline 58 (15), pp. 486-491, 2024. DOI: 10.1016/j.ifacol.2024.08.576.
- [C38] M. MAZZOLENI and L. Maurelli and S. Formentin and F. Previdi
A comparison of indirect and direct filter designs from data for LTI systems: the effect of unknown noise covariance matrices. 20th IFAC Symposium on System Identification (SYSID), Boston, USA, IFAC-PapersOnline 58 (15), pp. 133-138, 2024. DOI: 10.1016/j.ifacol.2024.08.517.
- [C37] D. Cesani, M. MAZZOLENI, F. Previdi
The scenario approach for data-driven prognostics with application to bearings data. 12th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes, (SAFEPROCESS), Ferrara, Italy, IFAC-PapersOnline 58 (4), pp. 461-466, 2024. DOI: 10.1016/j.ifacol.2024.07.261.
- [C36] D. Cesani, M. MAZZOLENI, F. Previdi
Leak detection for household pipelines based on a smart valve with single pressure and flow sensors. 12th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes, (SAFEPROCESS), Ferrara, Italy, IFAC-PapersOnline 58 (4), pp. 408-413, 2024. DOI: 10.1016/j.ifacol.2024.07.252.
- [C35] P. Boni, M. MAZZOLENI, R. Sala, F. Pirola, F. Previdi
Identification of relevant symptoms of performance degradation in industrial machines. 12th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes, (SAFEPROCESS), Ferrara, Italy, IFAC-PapersOnline 58 (4), pp. 467-472, 2024. DOI: 10.1016/j.ifacol.2024.07.262.
- [C34] G. Sonzogni, M. MAZZOLENI, M. Polver, A. Ferramosca, F. Previdi
Notch filter design with stability guarantees for mechanical resonance suppression in SISO LTI two-mass drive systems. 62nd IEEE Conference on Decision and Control (CDC), Marina Bay Sands, Singapore, pp. 7745-7750, 2023. DOI: 10.1109/CDC49753.2023.10383921.
- [C33] M. MAZZOLENI, N. Valceschini, F. Previdi
Model Uncertainty-Aware Residual Generators for SISO LTI Systems Based on Kernel Identification and Randomized Approaches. 62nd IEEE Conference on Decision and Control (CDC), Marina Bay Sands, Singapore, pp. 4849-4854, 2023. DOI: 10.1109/CDC49753.2023.10383264.
- [C32] M. Polver, A. Ferramosca, B. Sonzogni, M. MAZZOLENI, F. Previdi
Artificial Pancreas under a Zone Model Predictive Control based on Gaussian Process models: toward the personalization of the closed loop. 22nd IFAC World Congress (IFAC WC), Yokohama, Japan, IFAC-PapersOnline 56 (2), pp. 9642-9647, 2023. DOI: 10.1016/j.ifacol.2023.10.271.
- [C31] L. Pitturelli, M. MAZZOLENI, F. Previdi
FRAN-X: An improved diagnostic transfer learning approach with application to ball bearings fault diagnosis. 22nd IFAC World Congress (IFAC WC), Yokohama, Japan, IFAC-PapersOnline 56 (2), pp. 7716-7721, 2023. DOI: 10.1016/j.ifacol.2023.10.1175.
- [C30] M. MAZZOLENI, M. Scandella, F. Previdi
Evaluation of robust sensors placement schemes for leaks isolation in water distribution networks. 2nd IFAC Workshop on Control Methods for Water Resource Systems (CMWRS), IFAC-PapersOnline 55 (33), pp. 48-53, 2022. DOI: 10.1016/j.ifacol.2022.11.008.

- [C29] N. Valceschini, M. MAZZOLENI, L. Pitturelli, S. Salvi, M. Rinaldi, F. Previdi
Experimental fault detection of input gripping pliers in bottling plants. 11th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes, Pafos, Cyprus, IFAC-PapersOnline 55 (6), pp. 778-783, 2022. DOI: 10.1016/j.ifacol.2022.07.221.
- [C28] N. Valceschini, M. MAZZOLENI, L. Pitturelli, S. Salvi, M. Rinaldi, F. Previdi
Model-based fault diagnosis of sliding gates electro-mechanical actuators transmission components with motor-side measurements. 11th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes, Pafos, Cyprus, IFAC-PapersOnline 55 (6), pp. 784-789, 2022. DOI: 10.1016/j.ifacol.2022.07.222.
- [C27] M. Polver, F. Previdi, M. MAZZOLENI, A. Zucchi
A SIAT3HE Model of the COVID-19 Pandemic in Bergamo, Italy. 11th IFAC Symposium on Biological and Medical Systems, Ghent, Belgium, IFAC-PapersOnline 54 (15), pp. 263-268, 2022. DOI: 10.1016/j.ifacol.2021.10.266.
- [C26] K. Sarda, A. Acernese, L. Russo, M. MAZZOLENI
A comparison of envelope and statistical analyses for bearing diagnosis in hot steel rolling mill lines. 47th IEEE Annual Conference of the IEEE Industrial Electronics Society (IECON), Toronto (virtual), pp. 1-6, 2021. DOI: 10.1109/IECON48115.2021.9589440.
- [C25] M. MAZZOLENI, M. Scandella, S. Formentin, F. Previdi
Nonparametric continuous-time identification of linear systems: theory, implementation and experimental results. 1st IFAC Modeling, Estimation and Control Conference (MECC), Austin, TX (virtual), IFAC-PapersOnLine 54 (20), pp. 699-704, 2021. DOI: 10.1016/j.ifacol.2021.11.253.
- [C24] M. MAZZOLENI, V. Breschi, S. Formentin
Piecewise nonlinear regression with data augmentation. 19th IFAC Symposium on System Identification (SYSID), Padova (virtual), Italy, July 13-16, IFAC-PapersOnLine 54 (7), pp. 421-426, 2021. DOI: 10.1016/j.ifacol.2021.08.396.
- [C23] L. Maurelli, M. MAZZOLENI, F. Previdi
Modeling and simulation of bimetallic strips in industrial circuit breakers. 19th IFAC Symposium on System Identification (SYSID), Padova (virtual), Italy, July 13-16, IFAC-PapersOnLine 54 (7), pp. 803-808, 2021. DOI: 10.1016/j.ifacol.2021.08.460.
- [C22] M. MAZZOLENI, M. Scandella, S. Formentin, F. Previdi
Black-box continuous-time transfer function estimation with stability guarantees: a kernel-based approach. Proceedings of Machine Learning Research vol 120:1-10, 2nd Learning for dynamics and control conference (L4DC), University of California, Berkeley, CA, June 10-11th, 2020.
- [C21] M. MAZZOLENI, M. Scandella, S. Formentin, F. Previdi
Enhanced kernels for nonparametric identification of a class of nonlinear systems. 18th EUCA European Control Conference (ECC), San Petersburg, Russia, May 12-15, pp. 540-545, 2020. DOI: 10.23919/ECC51009.2020.9143785.
- [C20] D. Previtali, N. Valceschini, M. MAZZOLENI, F. Previdi
Identification of dynamic textures using Dynamic Mode Decomposition. 21st IFAC World Congress, Berlin, Germany, July 12-17, IFAC-PapersOnLine 53 (2), pp. 2423-2428, 2020. DOI: 10.1016/j.ifacol.2020.12.045.
- [C19] M. MAZZOLENI, M. Scandella, F. Previdi
KBERG: A MatLab toolbox for nonlinear kernel-based regularization and system identification. 21st IFAC World Congress, Berlin, Germany, July 12-17, IFAC-PapersOnLine 53 (2), pp. 1231-1236, 2020. DOI: 10.1016/j.ifacol.2020.12.1340.
- [C18] M. MAZZOLENI, M. Scandella, F. Previdi
Mechatronics applications of condition monitoring using a statistical change detection method. 21st IFAC World Congress, Berlin, Germany, July 12-17, IFAC-PapersOnLine 53 (2), pp. 92-97, 2020. DOI: 10.1016/j.ifacol.2020.12.100.
- [C17] M. MAZZOLENI, M. Scandella, S. Formentin, F. Previdi
A comparison of manifold regularization approaches for kernel-based system identification. 13th IFAC Workshop on Adaptive and Learning Control Systems, Winchester, United Kingdom, IFAC-PapersOnLine 52 (29), pp. 180-185, ISSN: 2405-8963, 2019. DOI: 10.1016/j.ifacol.2019.12.641.
- [C16] M. MAZZOLENI, M. Scandella, S. Formentin, F. Previdi
Classification of light charged particles via learning-based system identification. 57th IEEE Conference on Decision and Control, Miami Beach (FL), USA, pp. 6053-6058, ISBN: 978-1-5386-1395-5, 2018. DOI: 10.1109/CDC.2018.8618946.

- [C15] F. Previdi, Y. Maccarana, M. MAZZOLENI, M. Scandella, G. Pispola, N. Porzi
Development and Experimental Testing of a Health Monitoring System of Electro-Mechanical Actuators for Small Airplanes.
26th Mediterranean Conference on Control and Automation (MED), Zadar, Croatia,
ISBN: 978-1-5386-7890-9, ISSN: 2473-3504pp: 673-678, 2018. DOI: 10.1109/MED.2018.8442734.
- [C14] M. MAZZOLENI, M. Scandella, Y. Maccarana, F. Previdi, G. Pispola, N. Porzi
Condition monitoring of electro-mechanical actuators for aerospace using batch change detection algorithms.
2nd IEEE Conference on Control Technology and Applications (CCTA), Copenhagen, Denmark,
pp: 1747-1752, ISBN: 978-1-5386-7698-1, 2018. DOI: 10.1109/CCTA.2018.8511334.
- [C13] M. MAZZOLENI, M. Scandella, Y. Maccarana, F. Previdi, G. Pispola, N. Porzi
Condition assessment of electro-mechanical actuators for aerospace using relative density-ratio estimation.
18th IFAC Symposium on System Identification, Stockholm, Sweden, IFAC-PapersOnLine 51 (15), ISSN: 2405-8963, pp: 957 - 962, 2018. DOI: 10.1016/j.ifacol.2018.09.070.
- [C12] M. MAZZOLENI, M. Scandella, S. Formentin, F. Previdi
Identification of nonlinear dynamical system with synthetic data: a preliminary investigation.
18th IFAC Symposium on System Identification, Stockholm, Sweden, IFAC-PapersOnLine 51 (15), ISSN: 2405-8963, pp: 622-627, 2018. DOI: 10.1016/j.ifacol.2018.09.227.
- [C11] M. MAZZOLENI, S. Formentin, M. Scandella, F. Previdi
Semi-supervised learning of dynamical systems: a preliminary study.
16th European Control Conference (ECC), Limassol, Cyprus, ISBN: 978-3-9524-2698-2, 2018.
DOI: 10.23919/ECC.2018.8550550.
- [C10] M. MAZZOLENI, G. Maroni, F. Previdi
Unsupervised learning of fundamental emotional states via word embeddings.
IEEE Symposium Series on Computational Intelligence (SSCI), Hawaii, USA, pp: 31 - 36, ISBN: 978-1-5386-2726-6,
2017. DOI: 10.1109/SSCI.2017.8280819.
- [C09] M. MAZZOLENI, S. Formentin, F. Previdi, S.M. Savaresi
Control-oriented modeling of SKU-level demand in retail food market.
20th IFAC World Congress, Toulouse, France, IFAC-PapersOnLine 50 (1), pp: 13003 - 13008, ISSN: 2405-8963,
2017. DOI: 10.1016/j.ifacol.2017.08.1951.
- [C08] M. MAZZOLENI, Y. Maccarana, F. Previdi
A comparison of data-driven fault detection methods with application to aerospace electro-mechanical actuators.
20th IFAC World Congress, Toulouse, France, IFAC-PapersOnLine 50 (1), ISSN: 2405-8963, pp: 12797 -
12802, 2017. DOI: 10.1016/j.ifacol.2017.08.1837,
- [C07] M. MAZZOLENI, G. Maroni, Y. Maccarana, S. Formentin and F. Previdi
Fault detection in airliner electro-mechanical actuators via hybrid particle filtering.
20th IFAC World Congress, Toulouse, France, IFAC-PapersOnLine 50 (1), ISSN: 2405-8963, pp: 2860 - 2865,
2017. DOI: 10.1016/j.ifacol.2017.08.640.
- [C06] M. MAZZOLENI, Y. Maccarana, F. Previdi, G. Pispola, M. Nardi, F. Perni, S. Toro
Development of a reliable electro-mechanical actuator for primary control surfaces in small aircrafts.
IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), Munich, Germany,
ISBN: 978-1-5090-6000-9, ISSN: 2159-6255, pp: 1142 - 1147, 2017. DOI: 10.1109/AIM.2017.8014172.
- [C05] A. Cologni, M. MAZZOLENI, F. Previdi
Low computational complexity control of a three-phases open-windings AC brushless motor.
42nd IEEE Industrial Electronics society annual CONFERENCE (IECON), Florence, Italy, ISBN: 978-1-5090-3474-1,
pp: 577 - 582, 2016. DOI: 10.1109/IECON.2016.7793011,
- [C04] A. Cologni, M. MAZZOLENI, F. Previdi
Modeling and identification of an Electro-Hydraulic Actuator.
12th IEEE International Conference on Control and Automation (ICCA), Kathmandu, Nepal,
ISBN: 978-1-5090-1738-6, pp: 335 - 340, 2016. DOI: 10.1109/ICCA.2016.7505299.
- [C03] F. Previdi, M. MAZZOLENI, A. Cologni, M. Ermidoro
An application of the remote maintenance paradigm to semi-automated machines.
14th IMEKO TC10 Workshop on Technical Diagnostics, Milan, Italy, 2016, pp: 285 - 289.
- [C02] M. MAZZOLENI, F. Previdi
A Comparison of Classification Algorithms for Brain Computer Interface in Drug Craving Treatment.
9th IFAC Symposium on Biological and Medical Systems (BMS), Berlin, Germany, ISSN: 2405-8963,
pp: 487 - 492, 2015. DOI: 10.1016/j.ifacol.2015.10.188.
- [C01] M. MAZZOLENI, S. Formentin, F. Previdi and S. M. Savaresi
Fault Detection via modified Principal Direction Divisive Partitioning and application to aerospace electro-mechanical actuators. 53th IEEE Conference on Decision and Control (CDC), Los Angeles, USA,
ISBN: 978-1-4673-6090-6, ISSN: 0191-2216, pp: 5770 - 5775, 2014. DOI: 10.1109/CDC.2014.7040292.

Toolboxes

- [T01] M. MAZZOLENI, M. Scandella, F. Previdi
KBERG: A MatLab toolbox for nonlinear kernel-based regularization and system identification.
<https://cal.unibg.it/wp-content/uploads/papers/20210701-KBERG.7z>

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