

**Personal information**

Name: Chiara Toffanin  
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**Profile**

Motivated computer science engineer with interest and experience in automatic control, in particular applied to biological system connected to metabolism. Experience in modelling, model predictive control and data analysis in several industrial and biomedical applications, bioinformatics related to cancer research and control applied to nuclear magnetic resonance devices. Experienced in working in team and independently, and passionate about research in a dynamic, stimulating and multidisciplinary environment.

**Academic career**

2022 – present	Associate Professor at University of Pavia, Dipartimento di Ingegneria industriale e dell'informazione; SSD ING-INF/04 - Automatica
2019 – 2022	Assistant Professor (RTDb) at University of Pavia, Dipartimento di Ingegneria industriale e dell'informazione; SSD ING-INF/04 - Automatica
2017 – 2019	Assistant Professor (RTDa) at University of Pavia, Dipartimento di Ingegneria industriale e dell'informazione; SSD ING-INF/04 - Automatica
2016 – 2017	Postdoctoral researcher at University of Pavia Design and development of control algorithms
2015 – 2016	Postdoctoral researcher at University of Oxford Cancer genomics: model-based curve fitting of high throughput screening data
2012 – 2015	Postdoctoral researcher at University of Pavia Artificial Pancreas: closed-loop system to control glycaemia in Type 1 diabetes
2009 – 2012	PhD student at University of Pavia Thesis title: “Artificial Pancreas: from modelling and control design to software implementation and clinical data analysis” (30/01/2013)
2007 – 2009	Master Degree in Computer Science Engineering at University of Pavia Thesis title: “Development of model predictive control algorithms applied to the Artificial Pancreas” Graduated with 110/110 cum laude (13/10/2009)
2004 – 2007	Bachelor Degree in Computer Science Engineering at University of Pavia Thesis title: “Studio per la realizzazione di un carrello elettronico con tecnologia Portal, JSR-168 Compliant” Graduated with 110/110 cum laude (18/09/2007)
1999 - 2004	High School Diploma in Computer Science Technology at Istituto Tecnico Industriale Statale G. Cardano Vote 100/100 with encomio

**Research experience**

2017 – 2020	Research project: Design and development of control algorithms for glucose control and modelling of industrial autoclaves
2016 – 2017	Postdoctoral project: Design and development of control algorithms



- 2015 – 2016 Postdoctoral project: Development of a tool for the model-based curve fitting of high throughput screening data
- 2012 – 2015 Postdoctoral project: Development of control algorithms for an artificial pancreas
- Tuning of the algorithm exploiting data collected in outpatients clinical trials
  - Run-to-Run approaches to adapt the therapy day-by-day considering the variability of the patient
  - Non parametric and parametric identification techniques to tailor the model on each individual patient
  - Development of a tool for the analysis of a large amount of data collected during a preliminary 6-months clinical trial
- 2011 – 2012 Internship as academic research at University of California, Santa Barbara - Chemical Engineering Department
- Artificial Pancreas project: study of the insulin sensitivity dynamic and development of a safety module to avoid hypoglycaemia episodes to be integrated in the architecture of an artificial pancreas
- 2009 – 2012 PhD project: Development of model predictive control algorithms for the Artificial Pancreas
- Reengineering of the simulator developed in Simulink – Matlab environment
  - Improvement of the control algorithm exploiting new data collected in the clinical trials
  - Parametric approaches for the identification of new individual models to be used in the control algorithm
  - New procedure for tuning of the algorithm using the new parametric identified models
  - Development of a software platform for the clinical trials and integration of a telemedicine module with the control algorithm
  - Identification of a model for the noise which affects the glucose measurements using a large amount of data collected in clinical trials
  - Tuning of the algorithm exploiting data collected in longer clinical trials

#### Publications (34)

- P1. Aiello E.M., **C. Toffanin**, L. Magni, G. De Nicolao, Model-based identification of eating behavioral patterns in populations with type 1 diabetes, *Control Engineering Practice*, 2022. <https://doi.org/10.1016/j.conengprac.2022.105128>
- P2. Lo Presti J., A. Galderisi, F.J. Doyle, H.C. Zisser, E. Dassau, E. Renard, **C. Toffanin**, C. Cobelli, Intraperitoneal Insulin Delivery: Evidence of a Physiological Route for Artificial Pancreas From Compartmental Modeling, *Journal of Diabetes Science and Technology*, 2022. <https://doi.org/10.1177/19322968221076559>
- P3. **Toffanin C.**, L. Magni, C. Cobelli, Artificial Pancreas: In Silico Study Shows No Need of Meal Announcement and Improved Time in Range of Glucose with Intraperitoneal vs Subcutaneous Insulin Delivery, *IEEE Transactions on Medical Robotics and Bionics*, 2021. <https://doi.org/10.1109/TMRB.2021.3075775>



- P4. Iacono F., J. Lo Presti, I. Schimperna, S. Ferretti, A. Mezzadra, L. Magni, **C. Toffanin**, Improvement of manufacturing technologies through a modelling approach: an air-steam sterilization case-study, *Procedia Computer Science*, 180, 162-171, 2021.
- P5. Di Palma F., F. Iacono, **C. Toffanin**, A. Ziccardi, L. Magni, Scalable model for industrial coffee roasting chamber, *Procedia Computer Science*, 180, 122-131, 2021.
- P6. **Toffanin C.**, M. Kozak, Z. Sumnik, C. Cobelli, L. Petruzelkova, In silico trials of an open-source android-based artificial pancreas: a new paradigm to test safety and efficacy of do-it-yourself systems, *Diabetes Technology and Therapeutics*, 22, Issue 2, 112-120, 2020.
- P7. Aiello E.M., G. Lisanti, L. Magni, M. Musci, **C. Toffanin**, Therapy-driven Deep Glucose Forecasting, *Engineering Applications of Artificial Intelligence*, 87, 2020.
- P8. **Toffanin C.**, E.M. Aiello, C. Cobelli, L. Magni, Hypoglycemia Prevention via Personalized Glucose-Insulin Models Identified in Free-Living Conditions, *Journal of Diabetes Science and Technology*, 13, Issue 6, 1008-1016, 2019. <https://doi.org/10.1177/1932296819880864>
- P9. Galuppini G., R. Rolfi, **C. Toffanin**, D. Raimondo, Y. Xia, G. Ferrante, L. Magni, Towards a Model-Based Field-Frequency Lock for Fast-Field Cycling NMR, *Applied Magnetic Resonance*, 50, Issue 8, 1025-1047, 2019.
- P10. **Toffanin C.**, E.M. Aiello, S. Del Favero, C. Cobelli, L. Magni, Multiple models for artificial pancreas predictions identified from free-living condition data: A proof of concept study, *Journal of Process Control*, 77, 29-37, 2019. <https://doi.org/10.1016/j.jprocont.2019.03.007>
- P11. Galuppini G., E. Creaco, **C. Toffanin**, L. Magni, Service pressure regulation in water distribution networks, *Control Engineering Practice*, 86, 70-84, 2019. <https://doi.org/10.1016/j.conengprac.2019.03.007>
- P12. Aiello E.M., **C. Toffanin**, M. Messori, C. Cobelli, L. Magni, Postprandial Glucose Regulation via KNN meal classification in Type 1 Diabetes Model predictive control with integral action for artificial pancreas, *IEEE Control Systems Letters*, 3, Issue 2, 230-235, 2019. <https://doi.org/10.1109/LCSYS.2018.2844179>
- P13. Incremona G.P., M. Messori, **C. Toffanin**, C. Cobelli, L. Magni, Model predictive control with integral action for artificial pancreas, *Control Engineering Practice*, 77, 86-94, 2018. <https://doi.org/10.1016/j.conengprac.2018.05.006>
- P14. **Toffanin C.**, S. Del Favero, E.M. Aiello, M. Messori, C. Cobelli, L. Magni, Glucose-insulin model identified in free-living conditions for hypoglycaemia prevention, *Journal of Process Control*, 64, 27–36, 2018. <https://doi.org/10.1016/j.jprocont.2018.02.003>
- P15. Messori M., J. Kropff, S. Del Favero, J. Place, R. Visentin, R. Calore, **C. Toffanin**, F. Di Palma, G. Lanzola, A. Farret, F. Boscari, S. Galasso, A. Avogaro, P. Keith-Hynes, B.P. Kovatchev, D. Bruttomesso, L. Magni, J.H. DeVries, E. Renard, C. Cobelli for the AP@home consortium, Individually adaptive artificial pancreas in subjects with type 1 diabetes: a one-month proof-of-concept trial in free-living conditions, *Diabetes Technology & Therapeutics*, 19, Issue 10, 560-571, 2017. <https://doi.org/10.1089/dia.2016.0463>



- P16. **Toffanin C.**, R. Visentin, M. Messori, C. Cobelli, L. Magni, Towards a Run-to-Run Adaptive Artificial Pancreas: In Silico Results, *IEEE Transactions on Biomedical Engineering*, 65, Issue 3, 479-488, 2017. <https://doi.org/10.1109/TBME.2017.2652062>
- P17. **Toffanin C.**, M. Messori, C. Cobelli, L. Magni, Automatic adaptation of basal therapy for Type 1 diabetic patients: a Run-to-Run approach, *Biomedical Signal Processing and Control*, 31, 539-549, 2017.
- P18. Messori M., **C. Toffanin**, S. Del Favero, G. De Nicolao, C. Cobelli, L. Magni, Model individualization for artificial pancreas, *Computer Methods and Programs in Biomedicine*, 171, 133-140, 2019. <https://doi.org/10.1016/j.cmpb.2016.06.006>
- P19. Renard E., A. Farret, J. Kropff, D. Bruttomesso, M. Messori, J. Place, R. Visentin, R. Calore, **C. Toffanin**, F. Di Palma, G. Lanzola, P. Magni, F. Boscari, S. Galasso, A. Avogaro, P. Keith-Hynes, B. Kovatchev, S. Del Favero, C. Cobelli, L. Magni, J.H. DeVries, for the AP@home consortium, Day and Night Closed-Loop Glucose Control in Patients with Type 1 Diabetes under Free-Living Conditions: Results of a Single-Arm 1-Month Experience Compared With a Previously Reported Feasibility Study of Evening and Night at Home, *Diabetes Care*, 39, 1151-1160, 2016.
- P20. Kropff J., S. Del Favero, J. Place, **C. Toffanin**, R. Visentin, M. Monaro, M. Messori, F. Di Palma, G. Lanzola, A. Farret, F. Boscari, S. Galasso, P. Magni, A. Avogaro, P. Keith-Hynes, B.P. Kovatchev, D. Bruttomesso, C. Cobelli, J. H. DeVries, E. Renard, L. Magni, for the AP@home consortium, 2 month evening and night closed-loop glucose control in patients with type 1 diabetes under free-living conditions: a randomised crossover trial, *The Lancet Diabetes & Endocrinology*, 3, Issue 12, 939-947, 2015.
- P21. Del Favero S., J. Place, J. Kropff, M. Messori, P. Keith-Hynes, R. Visentin, M. Monaro, S. Galasso, F. Boscari, **C. Toffanin**, F. Di Palma, G. Lanzola, S. Scarpellini, A. Farret, B. Kovatchev, A. Avogaro, D. Bruttomesso, L. Magni, J.H. DeVries, C. Cobelli, E. Renard, on behalf of the AP@home Consortium, Multicenter outpatient dinner/overnight reduction of hypoglycemia and increased time of glucose in target with a wearable artificial pancreas using modular model predictive control in adults with type 1 diabetes, *Diabetes, Obesity and Metabolism*, 17, Issue 5, 468-476, 2015.
- P22. Lanzola G., **C. Toffanin**, F. Di Palma, S. Del Favero, L. Magni, R. Bellazzi, on behalf of the AP@home consortium, Designing an artificial pancreas architecture: the AP@home experience, *Medical & Biological Engineering & Computing*, 53, Issue 12, 1271-1283, 2015.
- P23. Zisser H., E. Renard, B. Kovatchev, C. Cobelli, A. Avogaro, R. Nimri, L. Magni, B. Buckingham, H.P. Chase, F.J. Doyle III, J. Lum, P. Calhoun, C. Kollman, E. Dassau, A. Ferret, J. Place, M. Breton, S. Anderson, C. Dalla Man, S. Del Favero, D. Bruttomesso, A. Filippi, R. Scotton, M. Phillip, E. Atlas, I. Muller, S. Miller, **C. Toffanin**, D.M. Raimondo, G. De Nicolao, R.W. Beck, for the Control to Range Study Group, Multicenter Closed-Loop Insulin Delivery Study Points to Challenges for Keeping Blood Glucose in a Safe Range by a Control Algorithm in Adults and Adolescents with Type 1 Diabetes From Various Sites, *Diabetes Technology and Therapeutics*, 16, Issue 10, 613-622, 2014.
- P24. Chase H., F. Doyle, H. Zisser, E. Renard, R. Nimri, C. Cobelli, B. Buckingham, D. Maahs, S. Anderson, Magni L., J. Lum, P. Calhoun, C. Kollman, R. Beck, L. Jovanovic, A. Wollitzer, W. Bevier, E. Dassau, K. Castorino, K. Markova, J. Wiley, E. Beveridge, N. Santibanez, A. Sales, M. Bradley, A. Castorino, B. Kovatchev, S. Demartini, S. Brown, W. Clarke, M. Breton, S. Patek, P. Keith-Hynes, C. Hughes-Karvetski, M. McElwee, M. Oliveri, C. Wakeman, A. Farret, M. Pelletier, H. Chevassus, J. Place, M. Phillip, E. Atlas, T. Oron, A. Farfel, S. Demol, E. Mel, T. Ben-Ari, M. Gilon, A. Parnes, I. Muller, S. Miller, A. Hamou, O. Hermon, G. Shiovitch-Mantzuri, G. Fayman, C. Man, A. Avogaro, D. Bruttomesso, A. Maran, M. Schiavon, S. D. Favero, R. Vistenin, R. Scotton, A. Filippi, **Toffanin C.**, De Nicolao G., S. Mancini, Raimondo D., D.Wilson, K. Benassi, P. Clinton, B. Harris, S.



Shanmugham, K. Caswell, R. Slover, S. Sullivan, L. Messer, V. Gage, J. Realsen, E. Westfall, H. Goettle, J. Sibayan, N. Njeru, W. Sauer, J. Pickup, I. Hirsch, H. Wolpert, Multicenter closed-loop/hybrid meal bolus insulin delivery with type 1 diabetes, *Diabetes Technology and Therapeutics*, 16, 623-632, 2014.

- P25. Kovatchev B.P., E. Renard, C. Cobelli, H.C. Zisser, P. Keith-Hynes, S.M. Anderson, S.A. Brown, D.R. Chernavvsky, M.D. Breton, L.B. Mize, A. Farret, J. Place, D. Bruttomesso, S. Del Favero, F. Boscari, S. Galasso, A. Avogaro, L. Magni, F. Di Palma, **C. Toffanin**, M. Messori, E. Dassau, F.J. Doyle III, Safety of Outpatient Closed-Loop Control: First Randomized Crossover Trials of a Wearable Artificial Pancreas, *Diabetes Care*, 37, Issue 7, 1789-1796, 2014.
- P26. Del Favero S., D. Bruttomesso, F. Di Palma, G. Lanzola, R. Visentin, A. Filippi, R. Scotton, **C. Toffanin**, M. Messori, S. Scarpellini, P. Keith-Hynes, B.P. Kovatchev, J.H. DeVries, E. Renard, L. Magni, A. Avogaro, C. Cobelli, on behalf of the AP@home consortium, First Use of Model Predictive Control in Outpatient Wearable Artificial Pancreas, *Diabetes Care*, 37, Issue 5, 1212-1215, 2014.
- P27. Lanzola G., S. Scarpellini, F. Di Palma, **C. Toffanin**, S. Del Favero, L. Magni, R. Bellazzi, on behalf of the AP@home consortium, Monitoring Artificial Pancreas Trials Through Agent-Based Technologies: A case Report, *Journal of Diabetes Science and Technology*, 8, Issue 2, 216-224, 2014.
- P28. Luijf Y.M., J.H. DeVries, K. Zwinderman, L. Leelarathna, M. Nodale, K. Caldwell, K. Kumareswaran, D. Elleri, J. Allen, M. Wilinska, M. Evans, R. Hovorka, W. Doll, M. Ellmerer, J.K. Mader, E. Renard, J. Place, A. Farret, C. Cobelli, S. Del Favero, C. Dalla Man, A. Avogaro, D. Bruttomesso, A. Filippi, R. Scotton, L. Magni, G. Lanzola, F. Di Palma, P. Soru, **C. Toffanin**, G. De Nicolao, S. Arnolds, C. Benesch, L. Heinemann, on behalf of the AP@home consortium, Day and Night Closed-Loop Control in Adults With Type 1 Diabetes Mellitus. A comparison of two closed-loop algorithms driving continuous subcutaneous insulin infusion versus patient self-management, *Diabetes Care*, 36, Issue 12, 3882-3887, 2013.
- P29. **Toffanin C.**, M. Messori, F. Di Palma, G. De Nicolao, C. Cobelli, L. Magni, Artificial Pancreas: Model Predictive Control Design from Clinical Experience, *Journal of Diabetes Science and Technology*, 7, Issue 6, 1470-1483, 2013.
- P30. **Toffanin C.**, H. Zisser, F.J. Doyle, E. Dassau, Dynamic Insulin On Board: Incorporation of Circadian Insulin Sensitivity Variation, *Journal of Diabetes Science and Technology*, 7, Issue 4, 928-940, 2013.
- P31. Patek S., L. Magni, E. Dassau, C.S. Hughes-Karvetski, **C. Toffanin**, G. De Nicolao, M. Breton, C. Dalla Man, E. Renard, H. Zisser, F. J. Doyle III, C. Cobelli, B. P. Kovatchev, Modular Closed-Loop Control of Diabetes, *IEEE Transactions on Biomedical Engineering*, 59, Issue 11, 2986-2999, 2012.
- P32. Breton M., A. Farret, D. Bruttomesso, S. Anderson, L. Magni, S. Patek, C. Dalla Man, J. Place, S. Demartini, S. Del Favero, **C. Toffanin**, C. Hughes, E. Dassau, H. Zisser, F.J. Doyle III, G. De Nicolao, A. Avogaro, C. Cobelli, E. Renard, B.P. Kovatchev, Fully Integrated Artificial Pancreas in Type 1 Diabetes: Modular Closed-Loop Glucose Control Maintains Near Normoglycemia, *Diabetes*, 61, Issue 9, 2230-2237, 2012.
- P33. Soru P., G. De Nicolao, **C. Toffanin**, C. Dalla Man, C. Cobelli, L. Magni, on behalf of the AP@home consortium, MPC based Artificial Pancreas: Strategies for individualization and meal compensation, *Annual Reviews in Control*, 36, 118-128, 2012.
- P34. Magni L., M. Forgione, **C. Toffanin**, C. Dalla Man, B. Kovatchev, G. De Nicolao and C. Cobelli, Run-to-Run Tuning of Model Predictive Control for Type 1 Diabetes Subjects: In Silico Trial, *Journal of Diabetes Science and Technology*, 3, Issue 5, 1091-1098, 2009.



- C1. Abuin P., A. Ferramosca, **C. Toffanin**, L. Magni, A.H. Gonzalez, Artificial pancreas under periodic MPC for trajectory tracking: handling circadian variability of insulin sensitivity, 18th IFAC Workshop on Control Applications of Optimization (CAO22), Gif sur Yvette (France), 18<sup>th</sup>-22<sup>nd</sup> July 2022.
- C2. Iacono F., L. Magni, **C. Toffanin**, Personalized LSTM models for glucose prediction in Type 1 diabetes subjects, 30<sup>th</sup> Mediterranean Conference on Control and Automation (MED 2022), Athens (Greece), 28<sup>th</sup> June - 1<sup>st</sup> July 2022.
- C3. Lo Presti J., R. Visentin, L. Magni, A. Galderisi, C. Cobelli, **C. Toffanin**, IP-IP Padova simulator: intraperitoneal insulin delivery and glucose sensing, International ATTD Conference on Advanced Technologies & Treatments for Diabetes (ATTD 2022), Barcelona (Spain), 27<sup>th</sup> – 30<sup>th</sup> April 2022.
- C4. Dalla Libera A., G. Pillonetto, **C. Toffanin**, A. Galderisi, C. Cobelli, In Silico Design and Assessment of a Time-varying PID Controller for an Intraperitoneal Artificial Pancreas, International ATTD Conference on Advanced Technologies & Treatments for Diabetes (ATTD 2022), Barcelona (Spain), 27<sup>th</sup> – 30<sup>th</sup> April 2022.
- C5. Iacono F., L. Magni, **C. Toffanin**, Patient-tailored LSTM model for hypoglycemia prevention: an in-silico case study, Mathematical Modelling and Control for Healthcare and Biomedical Systems (MCHBS 2021), Virtual Online Conference, 28<sup>th</sup> - 30<sup>th</sup> September 2021.
- C6. **Toffanin C.**, J. Lo Presti, L. Magni, A. Galderisi, C. Cobelli, Intraperitoneal model of insulin kinetics in type 1 diabetes, International ATTD Conference on Advanced Technologies & Treatments for Diabetes (ATTD 2021), Virtual Online Conference, 2<sup>nd</sup> - 5<sup>th</sup> June 2021.
- C7. Iacono F., J. Lo Presti, I. Schimperna, S. Ferretti, A. Mezzadra, L. Magni, **C. Toffanin**, Improvement of manufacturing technologies through a modelling approach: an air-steam sterilization case-study, International Conference on Industry 4.0 and Smart Manufacturing (ISM 2020), Virtual Online Conference, 23<sup>rd</sup> – 25<sup>th</sup> November 2020.
- C8. Di Palma F., F. Iacono, **C. Toffanin**, A. Ziccardi, L. Magni, Scalable model for industrial coffee roasting chamber, International Conference on Industry 4.0 and Smart Manufacturing (ISM 2020), Virtual Online Conference, 23<sup>rd</sup> – 25<sup>th</sup> November 2020.
- C9. **Toffanin C.**, M. Schiavon, E.M. Aiello, C. Cobelli, L. Magni, Incorporation of intraperitoneal insulin delivery in the UVA/Padova Type 1 diabetes simulator: model predictive control in silico trials vs the subcutaneous route, International ATTD Conference on Advanced Technologies & Treatments for Diabetes (ATTD 2020), Madrid (Spain), 19<sup>th</sup> – 22<sup>nd</sup> February 2020.
- C10. Aiello E.M., **C. Toffanin**, G. De Nicolao, C. Cobelli, L. Magni, A probabilistic framework to design realistic meal scenarios in in silico Type 1 diabetes free-living trials, International ATTD Conference on Advanced Technologies & Treatments for Diabetes (ATTD 2020), Madrid (Spain), 19<sup>th</sup> – 22<sup>nd</sup> February 2020.
- C11. Iacono F., S. Ferretti, A. Mezzadra, L. Magni, **C. Toffanin**, Industry 4.0: Mathematical model for monitoring sterilization processes, IEEE International Conference on Systems, Man, and Cybernetics (IEEE SMC 2019) - Industry 4.0, Bari (Italy), 6<sup>th</sup> – 9<sup>th</sup> October 2019.
- C12. Aiello E.M., Z. Wu, P.D. Christofides, **C. Toffanin**, C. Cobelli, L. Magni, Improving Diabetes Conventional Therapy via Machine Learning Modeling, American Control Conference (ACC), Philadelphia (Pennsylvania), 10<sup>th</sup> – 12<sup>th</sup> July 2019.



- C13. Aiello E.M., **C. Toffanin**, M. Messori, C. Cobelli, L. Magni, Postprandial Glucose Regulation via KNN meal classification in Type 1 Diabetes Model predictive control with integral action for artificial pancreas, 57<sup>th</sup> IEEE Conference on Decision and Control (CDC), Miami (Florida), 17<sup>th</sup> – 19<sup>th</sup> December 2018.
- C14. Magni L., **C. Toffanin**, Individualized Model Predictive Control of Type 1 Diabetes in Free Living Conditions, 6<sup>th</sup> IFAC Conference on Nonlinear Model Predictive Control, Madison (Wisconsin), 19<sup>th</sup> - 22<sup>nd</sup> August 2018.
- C15. **Toffanin C.**, S. Del Favero, E.M. Aiello, M. Messori, C. Cobelli, L. Magni, MPC Model Individualization in Free-Living Conditions: A Proof-of-Concept Case Study, 20<sup>th</sup> IFAC World Congress, Toulouse (France), 9<sup>th</sup> – 14<sup>th</sup> July 2017. <https://doi.org/10.1016/j.ifacol.2017.08.271>
- C16. Incremona G.P., M. Messori, **C. Toffanin**, C. Cobelli, L. Magni, Artificial Pancreas: from Control-to-Range to Control-to-Target, 20<sup>th</sup> IFAC World Congress, Toulouse (France), 9<sup>th</sup> – 14<sup>th</sup> July 2017. <https://doi.org/10.1016/j.ifacol.2017.08.1152>
- C17. Galuppini G., **C. Toffanin**, D.M. Raimondo, A. Provera, Y. Xia, R. Rolfi, G. Ferrante, L. Magni, Towards a Model-Based Field-Frequency Lock for NMR, World Congress, 50, no. 1, 13020-13025, 20<sup>th</sup> IFAC World Congress, Toulouse (France), 9<sup>th</sup> – 14<sup>th</sup> July 2017. <https://doi.org/10.1016/j.ifacol.2017.08.1999>
- C18. Messori M., **C. Toffanin**, S. Del Favero, G. De Nicolao, C. Cobelli, and L. Magni, A nonparametric approach for model individualization in an Artificial Pancreas, 9<sup>th</sup> IFAC Symposium on Biological and Medical Systems, Berlin (Germany), 31<sup>st</sup> August – 2<sup>nd</sup> September 2015.
- C19. E. Renard, J.H. Devries, C. Cobelli, L. Magni, J. Place, J. Kropff, S. Del Favero, R. Visentin, M. Monaro, **C. Toffanin**, F. Di Palma, G. Lanzola, M. Messori, A. Farret, F. Boscari, S. Galasso, D. Bruttomesso, A. Avogaro, AP@home consortium, Reduction of Hyper- and Hypoglycemia during Two Months with a Wearable Artificial Pancreas from Dinner to Breakfast in Patients with Type 1 Diabetes, American Diabetes Association (ADA), Boston (Massachusetts), 5<sup>th</sup> – 9<sup>th</sup> June 2015.
- C20. Magni L., **C. Toffanin**, F. Di Palma, M. Messori, S. Del Favero, R. Visentin, G. Lanzola, F. Boscari, S. Galasso, A. Avogaro, D. Bruttomesso, C. Cobelli, Adaptive Model Predictive Control for Artificial Pancreas: from in Silico to Outpatient, International ATTD Conference on Advanced Technologies & Treatments for Diabetes (ATTD 2015), Paris (France), 18<sup>th</sup> - 21<sup>st</sup> February 2015
- C21. **Toffanin C.**, A. Sandri, M. Messori, C. Cobelli, L. Magni, Automatic adaptation of basal-bolus therapy for Type 1 diabetic patients: a Run-to-Run approach, World Congress, 19, no. 1, 2070-2075, 19<sup>th</sup> IFAC World Congress Cape Town (South Africa), 24<sup>th</sup> – 29<sup>th</sup> August 2014.
- C22. Messori M., E. Fornasiero, **C. Toffanin**, C. Cobelli, L. Magni, Constrained Model Predictive Control for blood-glucose regulation in an Artificial Pancreas, World Congress, 19, no. 1, 10144-10149, 19<sup>th</sup> IFAC World Congress Cape Town (South Africa), 24<sup>th</sup> – 29<sup>th</sup> August 2014.
- C23. **Toffanin C.**, M. Messori, F. Di Palma, G. Lanzola, G. De Nicolao, C. Cobelli, L. Magni, Model Predictive Control for Artificial Pancreas: from in-silico to in-vivo, Gruppo Nazionale Bioingegneria (GNB), IV Congresso, Università degli Studi di Pavia, Pavia (Italy), 25<sup>th</sup> – 27<sup>th</sup> June 2014.
- C24. Del Favero S., J. Place, J. Kropff, M. Messori, P. Keith-Hynes, R. Visentin, M. Munaro, D. Bruttomesso, S. Galasso, F. Boscari, **C. Toffanin**, F. Di Palma, G. Lanzola, S. Scarpellini, A. Farret, B. P. Kovatchev, L. Magni, A. Avogaro, J. H. Devries, C. Cobelli, and E. Renard, on behalf of the AP@home consortium, Multicenter Outpatient Wearable Artificial Pancreas (AP) Study: Improved Safety and Efficacy of Glycemic Control, 74<sup>th</sup> American Diabetes Association Scientific Session, San Francisco, California (U.S.A.), 13<sup>th</sup> – 17<sup>th</sup> June 2014.



- C25. **Toffanin C.**, A. Sandri, M. Messori, F. Di Palma, C. Cobelli, L. Magni, Automatic adaptation of basal/bolus therapy for Type 1 diabetic patient wearing a glucose sensor: in silico trial results, *Diabetes Technology and Therapeutics*, 16, Issue 1, A149-A149, 2014.
- C26. M. Messori, E. Fornasiero, **C. Toffanin**, F. Di Palma, C. Cobelli, L. Magni, Suboptimal Constrained Model Predictive Control for automatic insulin delivery in Type-1 diabetic patients: design based on clinical data, *Diabetes Technology & Therapeutics*, 16, Issue 1, A105-A105, 2014.
- C27. Gentili M, D. Caltabiano, R. Sannino, **C. Toffanin**, F. Di Palma, L. Magni, S. Lane, Embedded Implementation of Modular Closed-Loop Control of Diabetes and In Silico Validation, *IEEE 15th International Conference on e-Health Networking, Applications and Services (Healthcom)*, Lisbon (Portugal), 9<sup>th</sup> – 12<sup>th</sup> October 2013.
- C28. Magni L., F. Di Palma, M. Messori, **C. Toffanin**, M. Torchio, G. De Nicolao and C. Cobelli, Model Predictive Control for outpatient trials: developments based on AP@home clinical data, *Diabetes Technology & Therapeutics*, 15, A81, 6th Advanced Technologies & Treatments for Diabetes (ATTD2013), Paris (France), 27<sup>th</sup> February - 2<sup>nd</sup> March 2013.
- C29. Magni L., P. Brega, F. Di Palma, M. Messori, **C. Toffanin** and C. Cobelli, Hypoglycaemia Detection for Outpatient trial: Trade-off Between True and False Positive, 6th Advanced Technologies & Treatments for Diabetes (ATTD2013), Paris (France), 27<sup>th</sup> February - 2<sup>nd</sup> March 2013.
- C30. Di Palma F., A. Avogaro, C. Benesch, D. Bruttomesso, J.H. DeVries, W. Doll, G. De Nicolao, S. Del Favero, L. Heinemann, R. Hovorka, L. Leelarathna, Y.M. Luijf, J. Mader, M. Nodale, J. Place, E. Renard, P. Soru, **C. Toffanin**, L. Magni, C. Cobelli on behalf of the AP@home consortium, Impact of different timing of insulin delivery in a 23-hour clinical trial with the international Artificial Pancreas (iAP) control algorithm, 1st Annual Meeting of the European Association for the Study of Diabetes (EASD), Dubai (United Arab Emirates), 4<sup>th</sup> – 6<sup>th</sup> December 2012.
- C31. Devries J.H., A. Avogaro, C. Benesch, D. Bruttomesso, K. Caldwell, C. Cobelli, W. Doll, S. Del Favero, L. Heinemann, R. Hovorka, L. Leelarathna, Y.M. Luijf, J. Mader, L. Magni, M. Nodale J. Place, E. Renard, **C. Toffanin**, on behalf of the AP@home consortium, Comparison of Two Closed Loop Algorithms with Open Loop Control in Type 1 Diabetes, *Wiener Klinische Wochenschrift*, 124, 21-22, 72nd Scientific sessions American Diabetes Association (ADA 2012), Philadelphia (Pennsylvania), 8<sup>th</sup> -12<sup>th</sup> June 2012.
- C32. **Toffanin C.**, H. Zisser, F. J. Doyle III, E. Dassau, Dynamic Insulin On Board: An Approach Based on the Circadian Rhythm of Insulin Sensitivity, 72nd Scientific sessions American Diabetes Association (ADA 2012), Philadelphia (Pennsylvania), 8<sup>th</sup> -12<sup>th</sup> June 2012.
- C33. **Toffanin C.**, L. Magni, G. De Nicolao, H. Zisser, B. Kovatchev, E. Dassau, F.J. Doyle III, C. Dalla Man and C. Cobelli, Meal regulation in Type 1 diabetes: Model Predictive artificial pancreas controller enhanced by insulin-on-board calculation, 4th International ATTD Conference on Advanced Technologies and Treatments for Diabetes (ATTD 2012), Barcelona (Spain), 8<sup>th</sup> – 11<sup>th</sup> February 2012.
- C34. Magni L., P. Soru, **C. Toffanin**, C. Dalla Man, C. Cobelli, G. De Nicolao, AP@Home: ap-algorithms: model predictive control with a feedback/feedforward meal control strategy, 5th International Conference on Advanced Technologies & Treatments for Diabetes (ATTD 2012), Barcelona (Spain), 8<sup>th</sup> – 11<sup>th</sup> February 2012.
- C35. Soru P., C. Dalla Man, **C. Toffanin**, M. E. Wilinska, R. Hovorka, L. Magni, G. De Nicolao, C. Cobelli, In silico comparison of AP@home closed loop control algorithms, 5th International Conference on Advanced Technologies & Treatments for Diabetes (ATTD 2012), Barcelona (Spain), 8<sup>th</sup> – 11<sup>th</sup> February 2012.





- C36. Magni L., **C. Toffanin**, C. Dalla Man, B. Kovatchev, C. Cobelli, G. De Nicolao, Model Predictive Control of Type 1 Diabetes Built on Top of Conventional Therapy, 18th World Congress International Federation of Automatic Control (IFAC 2011), Milan (Italy), 28<sup>th</sup> August – 2<sup>nd</sup> September 2011.
- C37. Renard E., D. Bruttomesso, L. Magni, C. Dalla Man, S. Del Favero, **C. Toffanin**, J. Place, A. Farret, A. Maran, E. Dassau, M. Breton, C. Cobelli, The JDRF multi-modular Model Predictive Control-To-Range (MPC2R) allows simultaneous improvement in both safety and efficacy of closed-loop insulin delivery in type 1 diabetes, 71st Scientific sessions American Diabetes Association (ADA 2011), San Diego (California), 24<sup>th</sup> – 26<sup>th</sup> June 2011.
- C38. Magni L., **C. Toffanin**, P. Soru, C. Dalla Man, C. Cobelli, G. De Nicolao, Individualization of Model Predictive Control for the artificial pancreas from standard CGM traces, 4th International ATTD Conference on Advanced Technologies & Treatments for Diabetes (ATTD 2011), London (UK), 16<sup>th</sup> – 19<sup>th</sup> February 2011.
- C39. Magni L., **C. Toffanin**, C. Dalla Man, B. Kovatchev, C. Cobelli, G. De Nicolao, Range Correction Module with Model Predictive Control for Type 1 diabetes, Diabetes Technology Meeting (DTM 2010) , Bethesda (Maryland), 11<sup>th</sup> – 13<sup>th</sup> November 2010.
- C40. Magni L., **C. Toffanin**, G. De Nicolao, C. Dalla Man, J. Place, E. Renard, B. Kovatchev, C. Cobelli, Open-loop informed model predictive control for the artificial pancreas, 3rd International ATTD Conference on Advanced Technologies & Treatments for Diabetes (ATTD 2010), Basel (Switzerland), 10<sup>th</sup> – 13<sup>th</sup> February 2010.

#### Conference sessions

- Dec 2018                      Organizer of the invited session entitled “Glucose Regulation and Biomedical Systems” at the 57<sup>th</sup> IEEE Conference on Decision and Control, 17<sup>th</sup> – 19<sup>th</sup> December 2018
- 17/12/2018                   Chair of the invited session entitled “Glucose Regulation and Biomedical Systems” at the 57<sup>th</sup> IEEE Conference on Decision and Control, 17<sup>th</sup> – 19<sup>th</sup> December 2018

#### Patents

- Soru P., L. Magni, C. Toffanin, G. De Nicolao, C. Dalla Man and C. Cobelli, Method for controlling the delivery of insulin and related system, Patent N. PCT/IT2012/000083, 23/3/2012, Patent N. 9836943, Type Grant, 20/01/2020.
- Soru P., L. Magni, C. Toffanin, G. De Nicolao, C. Dalla Man and C. Cobelli, Method for controlling the delivery of insulin and related system, Patent N. 9827371, Type Grant, 28/11/2017, Patent Publication Number 20150174322.  
<https://patents.justia.com/patent/9827371>.

#### Book

- Del Favero S., Toffanin C., Magni L., Cobelli C. (2019). “Deployment of modular MPC for type 1 diabetes control: the Italian experience 2008–2016.” The Artificial Pancreas, 1<sup>st</sup> edition, Current Situation and Future Directions, ISBN: 9780128156568.  
<https://doi.org/10.1016/B978-0-12-815655-1.00016-8>.

#### Memberships in research projects

- 10/2020 - present            Project FET: “A Bionic Invisible Pancreas To Forget Diabetes” (FORGETDIABETES)  
 Scientific manager of the UNIPV unit
- 20/2/2019 –  
 19/2/2020                      Project “Sviluppo di un tool di modellizzazione e simulazione dei gruppi di fasi (P/G) del controllore Fedegari per autoclavi”, in collaboration with FEDEGARI AUTOCLAVI SpA  
 Scientific manager (30.000€)



24/1/2018 – 23/1/2019	Project “Sviluppo di un tool (TH4-PGMODEL) di modellizzazione e simulazione dei gruppi di fasi (P/G) del controllore THEMA4 per autoclavi”, in collaboration with FEDEGARI AUTOCLAVI SpA Scientific manager (30.000€)
5/4/2017 - 4/1/2018	Project “Prototipazione di un tool (TH4-PGMODEL) di modellizzazione e simulazione dei gruppi di fasi (P/G) del controllore THEMA4”, in collaboration with FEDEGARI AUTOCLAVI SpA Scientific manager (20.000€)
2016 - 2019	Project PRIN15: “Forget Diabetes: Adaptive Physiological Artificial Pancreas”, Member of the research unit of the University of Pavia (53.726€)
2016 – 2018	Project IDENTIFY: “Characterization, modelling and simulation software tool of the magnetic field control loop for Fast Field Cycling (FFC) NMR”, in collaboration with STELAR S.R.L., Member of the research unit of the University of Pavia (60.000€)
1/2/2010- 31/10/2014	European Project FP7-ICT-2009-4, “Bringing the Artificial Pancreas Home” Member of the research unit of the University of Pavia (863.321€)
1/12/2010- 30/11/2014	FIRB – Futuro in Ricerca, “Pancreas artificiale: sviluppo in silico e validazione in vivo di algoritmi per il controllo della glicemia”, Member of the research unit of the University of Pavia (274.000€)
22/9/2008- 21/9/2010	Project PRIN07: Pancreas artificiale: modelli fisiologici, algoritmi di controllo e test clinico: “Algoritmi di controllo predittivo per il pancreas artificiale” Member of the research unit of the University of Pavia (47.000€)

#### Participation to committees

2021- present	Academic coordinator of Bachelor degree in Electronic and Computer Science Engineering, University of Pavia (Referente Corso di Laurea triennale in Ingegneria Elettronica e Informatica)
2018 - 2021	Member of the Department Council (“Giunta di Dipartimento”)
2017 - present	Member of the Conference editorial board of the IEEE Control Systems Society (CSS), Associate Editor
2017 - present	Member of the board of teachers (“Collegio dei docenti”) for the PhD course in “Electronics, Computer Science and Electrical Engineering”, from cycle: XXXIII (academic year: 2017/2018)
07/12/2017	Member of the evaluation Committee of the Ph.D. candidate Konstanze Kolle at Norwegian University of Science and Technology, Department of Engineering Cybernetics for the thesis entitled “Towards a safe artificial pancreas: meal detection and the intraperitoneal route”

#### Awards and grants

2020	Winner of the Italian fund “Progetto Pavia – Boston 2020”
2017	Winner of the Italian fund “Finanziamento delle attività base di ricerca”
2015	Winner of postdoctoral fellowship at the Oxford University for high-throughput screen data analysis
2013	Finalist at MIMOS (Movimento Italiano Modellazione e Simulazione) competition, 3 <sup>rd</sup> position in the contest for the best PhD thesis on the 3D, virtually and simulation topics
2011/2012	Residential scholarship for PhD and master student in the biomedical field



## Teaching

Mar 2019 – present	Assistant professor at University of Pavia on automatic controls for the MSc course entitled “Industrial Control” (20h - 1 CFU)
Oct 2017 – present	Assistant professor at University of Pavia on automatic controls for the BSc course entitled “Controlli Automatici” (Automatic control – 34h - 2 CFU)
Mar 2017 – present	Assistant professor at University of Pavia on automatic controls for the BSc course entitled “Fondamenti di automatica” (Fundamentals of automation – 40h - 3 CFU)
Mar 2017 – Oct 2017	Assistant professor at University of Pavia on automatic controls for the MSc course entitled “Industrial automation” (20h - 1 CFU)
Sep 2016 - Jan 2017	Teaching assistant at University of Pavia on automatic controls for the BSc course entitled “Controlli automatici” (Automatic control)
April 2016	Training course at University of Oxford on high throughput screening data analysis using HTScape, entitled “Training for compound screens and other TDI plated screens”
Sep 2014 - Jan 2015	Teaching assistant at University of Pavia on automatic controls for the BSc course entitled “Controlli automatici” (Automatic control) Teaching assistant at University of Pavia on computer science for the BSc course entitled “Fondamenti di informatica” (Fundamentals of computer science)
Feb – Sep 2014	Teaching assistant at University of Pavia on computer science for the BSc course entitled “Fondamenti di informatica” (Fundamentals of computer science)
Sep 2013– Jan 2014	Teaching assistant at University of Pavia on automatic controls for the BSc course entitled “Controlli automatici” (Automatic control)
Dec 2010 - Jan 2011	Teaching assistant at University of Pavia on industrial control for the MSc course entitled “Controllo Industriale” (Industrial control)
Jun – July 2010	Teaching assistant at University of Pavia on automatic controls for the BSc course entitled “Controlli automatici” (Automatic control)
Mar - Jun 2010	Teaching assistant at University of Pavia on industrial automation for the MSc course entitled “Automazione Industriale” (Industrial automation)
Mar - April 2010	Lecturer at University of Pavia on introduction of system modelling and control for the BSc course entitled “Introduzione all’analisi dei sistemi” (Introduction to system theory)
Dec 2009 - Jan 2010	Teaching assistant at University of Pavia on system theory for the BSc course entitled “Teoria dei sistemi” (System theory)
Dec 2009 - Jan 2010	Teaching assistant at University of Pavia on industrial control for the MSc course entitled “Controllo Industriale” (Industrial control)
Feb 2006 - Sep 2008	Teaching assistant at University of Pavia on computer science for the BSc course entitled “Fondamenti di informatica” (Fundamentals of computer science)

## Oral presentation

Apr 2021	“Artificial Pancreas: Evolution from an invasive device to a portable, patient-tailored and adaptive system ensuring safety”, PhD program in Automatic Control, Bioengineering and Operations Research (ABRO), 2021 ABRO Course on Advances in Automatic Control
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- Health and Control, Dipartimento di Ingegneria Informatica, Automatica e Gestionale Antonio Riberti, Università di Roma La Sapienza, Rome, Italy, 23<sup>rd</sup> Apr, 2021

- Apr 2021 “Artificial Pancreas: new challenges in T1D glucose control”, Laurea Magistrale in Elettronica per l'Automazione e le Telecomunicazioni, Dipartimento di Ingegneria, Università degli Studi del Sannio di Benevento, Benevento, Italy, 21<sup>st</sup> Apr, 2021
- Mar 2021 “Artificial Pancreas: new challenges in T1D glucose control”, Dipartimento di Ingegneria Gestionale, dell'Informazione e della Produzione, Università degli Studi di Bergamo, Bergamo, Italy, 23<sup>rd</sup> Mar, 2021
- Nov 2020 “Scalable model for industrial coffee roasting chamber”, IEEE ISM 2019: International Conference on Industry 4.0 and Smart Manufacturing, 23<sup>rd</sup> Nov, 2020
- Oct 2019 “Industry 4.0: Mathematical model for monitoring sterilization processes”, IEEE SMC 2019: IEEE International Conference on Systems, Man, and Cybernetics - Industry 4.0, Bari, Italy, 6<sup>th</sup> Oct, 2019
- Dec 2018 “Individualized Model Predictive Control for Type 1 Diabetes: the Pavia experience”, Department of Engineering Cybernetics, Norwegian University of Science and Technology (NTNU), Trondheim, Norway, 6<sup>th</sup> Dec, 2018
- Sept 2018 “Postprandial glucose regulation via KNN meal classification in type 1 diabetes”, SIDRA 2018: Convegno Annuale dei Docenti e Ricercatori Italiani in Automatica, Florence, Italy, 12<sup>th</sup> – 14<sup>th</sup> Sep, 2018
- Sept 2017 “Model Individualization for MPC based on Free-Living Conditions data”, SIDRA 2017: Convegno Annuale dei Docenti e Ricercatori Italiani in Automatica, Milan, Italy, 11<sup>th</sup> – 13<sup>th</sup> Sep, 2017
- Jul 2017 “Artificial Pancreas: From Control-To-Range to Control To-Target”, 18th IFAC World Congress, Toulouse, France, 2017, 9-14 July, invited session entitled “Advances in Artificial Pancreas Control Systems”
- Mar 2016 “HTScape: a tool/framework for HTS data analysis”, University of Oxford, Department of Oncology, Oxford, UK, 11<sup>th</sup> Mar, 2016
- Sep 2014 “Model Predictive Control for Artificial Pancreas: from in-silico to in-vivo”, SIDRA 2014: Convegno Annuale dei Docenti e Ricercatori Italiani in Automatica, Bergamo, Italy, 8<sup>th</sup> – 10<sup>th</sup> Sep, 2014
- Feb 2012 “Dynamic Insulin On Board”, UCSB, University of California Santa Barbara, Santa Barbara, California, 2<sup>nd</sup> Feb, 2012
- Aug 2011 “Model Predictive Control of Type 1 Diabetes added to Conventional Therapy”, 18th IFAC World Congress, Milan, Italy, 2011, 28 Aug–2 Sep, invited session entitled “Modeling and Control for the Artificial Pancreas: a New Era in Glucose Regulation of People with Type 1 Diabetes Mellitus”
- Feb 2011 “Clinical Software and demo for testing of different MPC controllers”, AP@home project meeting, London, UK, 16<sup>th</sup> – 19<sup>th</sup> Feb, 2011

#### Supervision activity

##### Ph.D. students (3)

- Tutor of Jorge Lo Presti, Ph.D. student, University of Pavia. “Control algorithms based on neural network”. Period 2021-present.



- Tutor of Francesca Iacono, Ph.D. student, University of Pavia. “Modelling and Control of industrial processes”. Period 2019-present.
- Tutor of Eleonora Maria Aiello, Ph.D. student, University of Pavia. “Control algorithms for Artificial Pancreas”. Period 2016-2019. Currently Post-doc at Harvard University.

#### Master students (14)

- Advisor of Rebecca Franchi, Master Thesis in Industrial Automation Engineering, University of Pavia. “Artificial pancreas: toward a multiday run-to-run approach”. Academic year 2020/2021.
- Advisor of Andrea Marazzi, Master Thesis in Industrial Automation Engineering, University of Pavia. “Identificazione del modello di un autoclave per processi di sterilizzazione in vapor saturo”. Academic year 2019/2020.
- Advisor of Jorge Lo Presti, Master Thesis in Industrial Automation Engineering, University of Pavia. “Modelling of a pH neutralization process via recurrent neural networks: stability study and possible control applications”. Academic year 2019/2020.
- Advisor of Macha Dinesh Chandra Murthy, Master Thesis in Industrial Automation Engineering, University of Pavia. “Autoclave modelling: model definition and parameters optimization of the jacket subsystem”. Academic year 2019/2020.
- Advisor of Francesca Iacono, Master Thesis in Industrial Automation Engineering, University of Pavia. “Model of an autoclave in air-steam and saturated steam cycles: definition and parameters optimization”. Academic year 2017/2018.
- Advisor of Mattia Grecchi, Master Thesis in Computer Science Engineering, University of Pavia. “Individual model for artificial pancreas: identification from free-living condition data”. Academic year 2015/2016.
- Co-Advisor of Giacomo Galuppini, Master Thesis in Computer Science Engineering, University of Pavia. “Study for a Field Frequency Lock for FFC NMR applications”, Advisor Prof. Lalo Magni. Academic year 2015/2016.
- Co-Advisor of Andrea Mezzadra, Master Thesis in Computer Science Engineering, University of Pavia. “Identification of glucose-insulin models for MPC glucose control in Type 1 diabetic patients: a non-parametric approach”, Advisor Prof. Lalo Magni. Academic year 2013/2014.
- Co-Advisor of Eleonora Maria Aiello, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Identificazione di modelli per un pancreas artificiale tramite ottimizzazione vincolata”, Advisor Prof. Lalo Magni. Academic year 2013/2014.
- Co-Advisor of Luca Andretta, Master Thesis in Computer Science Engineering, University of Pavia. “Identificazione non parametrica di modelli per la progettazione di un Pancreas Artificiale”, Advisor Prof. Lalo Magni. Academic year 2012/2013.
- Co-Advisor of Alice Sandri, Master Thesis in Computer Science Engineering, University of Pavia. “Individualizzazione automatica di terapie per la cura di pazienti diabetici di tipo 1”, Advisor Prof. Lalo Magni. Academic year 2012/2013.



- Co-Advisor of Mirko Messori, Master Thesis in Computer Science Engineering, University of Pavia. “Riprogettazione di uno schema di controllo predittivo per un Pancreas Artificiale a partire da dati clinici”, Advisor Prof. Lalo Magni. Academic year 2011/2012.
- Co-Advisor of Marcello Torchio, Master Thesis in Computer Science Engineering, University of Pavia. “Modellazione del segnale di rumore di un sensore di glicemia sottocutanea per lo sviluppo di un Pancreas Artificiale”, Advisor Prof. Lalo Magni. Academic year 2011/2012.
- Co-Advisor of Paola Soru, Master Thesis in Computer Science Engineering, University of Pavia. “Stima di modelli lineari per il Pancreas Artificiale”, Advisor Prof. Lalo Magni. Academic year 2009/2010.

#### Bachelor students (32)

- Advisor of Valeria Rita Orlando, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Sviluppo e analisi di reti neurali LSTM per la predizione di picchi ipoglicemici in pazienti diabetici di tipo 1”. Academic year 2019/2020.
- Advisor of Mattia Scivola, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Studio e sviluppo di reti neurali per sistemi dinamici tramite Python”. Academic year 2019/2020.
- Advisor of Sara Lanzarone, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Reti LSTM personalizzate per il pancreas artificiale: valutazione delle performance in un caso studio in silico”. Academic year 2019/2020.
- Advisor of Davide Malerba, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Reti neurali ricorrenti: studio di reti LSTM e possibili applicazioni”. Academic year 2019/2020.
- Advisor of Chiara Maria Buffoni, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Modelli per il pancreas artificiale: studio di reti LSTM”. Academic year 2019/2020.
- Advisor of Alessandro Scarpelli, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Modello intraperitoneale per la cinetica dell’insulina nel diabete di tipo 1”. Academic year 2019/2020.
- Advisor of Eleonora Trapani, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Identificazione in silico di modelli glucosio - insulina intraperitoneale: analisi della tempo-varianza e delle non linearità”. Academic year 2019/2020.
- Advisor of Alessandro Alini, Bachelor Thesis in Electronic Engineering, University of Pavia. “Modellizzazione e controllo tramite un regolatore PID di un piano basculante”. Academic year 2019/2020.
- Advisor of Serena Marino, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Identificazione in silico di modelli glucosio-insulina per pazienti diabetici di tipo 1 trattati con terapia intraperitoneale”. Academic year 2019/2020.
- Advisor of Lara Ronga, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Terapie insuliniche per il diabete mellito di tipo I: differenze tra somministrazione sottocutanea e intraperitoneale”. Academic year 2019/2020.
- Advisor of Simone Rancati, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Pancreas artificiale personalizzato: predizioni della glicemia di un paziente diabetico di tipo 1 tramite un multi-modello”. Academic year 2019/2020.



- Advisor of Eleonora Luppi, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Pancreas artificiale adattativo: analisi in-silico dei dati clinici e proposta di miglioramento della velocità di convergenza della terapia diurna”. Academic year 2019/2020.
- Advisor of Irene Schimperia, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Studio di reti neurali LSTM per l'identificazione di modelli di sistemi dinamici”. Academic year 2019/2020.
- Advisor of Virginia Sampognaro, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Pancreas artificiale adattativo: analisi in-silico di dati clinici e proposta di miglioramento della velocità di convergenza della terapia notturna”. Academic year 2019/2020.
- Advisor of Martina Suppa, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Pancreas artificiale adattativo: analisi in-silico di dati clinici e proposta di miglioramento dell'algoritmo di controllo”. Academic year 2019/2020.
- Advisor of Alessandro Ferrari, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Identificazione del multi-modello di un paziente diabetico di tipo 1 per lo sviluppo di un pancreas artificiale”. Academic year 2019/2020.
- Advisor of Lucia Mantova, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Miglioramento e personalizzazione dell'algoritmo adattativo utilizzato per la taratura della terapia insulinica intraperitoneale di una popolazione di 100 pazienti virtuali”. Academic year 2018/2019.
- Advisor of Sara Macri, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Modellizzazione e controllo di un piano basculante affetto da non linearità”. Academic year 2018/2019.
- Advisor of Davide Vairetti, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Sviluppo e validazione di un'interfaccia utente per la sperimentazione animale di un pancreas artificiale con infusione intraperitoneale”. Academic year 2018/2019.
- Advisor of Andrea Pigozzi, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Ottimizzazione della terapia insulinica basale in pazienti affetti da diabete di tipo 1 caratterizzati da variabilità di tipo intra- e inter-day”. Academic year 2018/2019.
- Advisor of Daniele Viola, Bachelor Thesis in Electronic and Telecommunication Engineering, University of Pavia. “Modellizzazione e controllo di un piano basculante”. Academic year 2018/2019.
- Advisor of Elisa Setti, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Definizione della terapia insulinica ottimale somministrata per via intraperitoneale in maialini diabetici alimentati per via intravenosa”. Academic year 2018/2019.
- Co-Advisor of Roberto Gallotta, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Uso di reti neurali per la previsione della glicemia per pazienti diabetici”. Academic year 2017/2018.
- Advisor of Alessia Gerbasi, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Identificazione di multi-modelli metabolici individualizzati per pazienti diabetici di tipo 1”. Academic year 2017/2018.
- Advisor of Roberto Di Matteo, Bachelor Thesis in Biomedical Engineering, University of Pavia. “Identificazione di multi-modelli metabolici individualizzati per pazienti diabetici di tipo 1”. Academic year 2017/2018.



- Advisor of Riccardo Merlano, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Studio dei fattori che influenzano la risposta al pasto durante la sperimentazione di un pancreas artificiale nel centro clinico Amsterdam”. Academic year 2016/2017.
- Advisor of Claudio Vitelli, Bachelor Thesis in Electronic Engineering, University of Pavia. “Studio dei fattori che influenzano la risposta al pasto durante la sperimentazione di un pancreas artificiale nel centro clinico Montpellier”. Academic year 2016/2017.
- Advisor of Francesco Carella, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Studio di tecniche per la taratura automatica di un PID per il controllo del vapore in un autoclave”. Academic year 2016/2017.
- Co-Advisor of Federica Chiesa, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Identificazione di Modelli Lineari per il Pancreas Artificiale”, Advisor Prof. Lalo Magni. Academic year 2013/2014.
- Co-Advisor of Simone Mancini, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Sviluppo e validazione di un’interfaccia per la sperimentazione clinica di un Pancreas Artificiale”, Advisor Prof. Lalo Magni. Academic year 2010/2011.
- Co-Advisor of Marco Acquistapace, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Modelli del sistema glucosio-insulina per pazienti diabetici di tipo 1 basati sulla risposta impulsiva”, Advisor Prof. Lalo Magni. Academic year 2009/2010.
- Co-Advisor of Gabriele Tiberti, Bachelor Thesis in Computer Science Engineering, University of Pavia. “Sistema di telemedicina per Pancreas Artificiale: predisposizione in tempo reale dei dati acquisiti da trasmettere”, Advisor Prof. Lalo Magni. Academic year 2009/2010.

#### Referee Activity

- Referee in the Bioengineering field (Science, Nature, Nature Communications, IEEE Transactions on Biomedical Engineering, IEEE Journal of Biomedical and Health Informatics, Journal of Diabetes Science and Technology, Diabetes Technology and Therapeutics, Computers in Biology and Medicine, Computer Methods and Programs in Biomedicine, Journal of Diabetes Research, Journal of Medical Research and Innovation Diabetes, Engineering Science and Technology an International Journal, Biocybernetics and Biomedical Engineering, Sensors, Biomedical Signal Processing and Control, Journal of Healthcare Engineering, JMIR Diabetes).
- Referee in the Automatic Control field (IEEE Transactions on Automatic Control, IEEE Transactions on Systems, Man and Cybernetics Systems, Engineering Applications of Artificial Intelligence, Journal of Process Control, Optimal Control Applications and Methods, Complexity Journal, Mathematical Problems in Engineering, Transactions on Control Systems Technology, Transactions on Computational Social Systems, IEEE Access, Nonlinear Analysis Hybrid Systems, Robust and Nonlinear Control).
- Conferences Referee in the Automatic Control field (IEEE Conference on Decision and Control – CDC, International Federation of Automatic Control World Conference – IFAC, American Control Conference – ACC, IFAC Conference on Nonlinear Model Predictive Control, International Symposium on Mathematical Theory of Networks and Systems, IEEE International Conference on Systems, Man, and Cybernetics, International Symposium on Mathematical Theory of Networks and Systems, IFAC Symposium on Dynamics and Control of Process Systems, including Biosystems, IFAC Workshop on Control Applications of Optimization).
- Conferences Referee in the Bioengineering field (IFAC Symposium on Biological and Medical Systems).





Skills

Software/programming skills	Excellent: Matlab, GUI development (Matlab) Medium: R, Java, Python, Django, SQL Sufficient: SPSS, C language, Xml, xls, css, hibernate, javascript, jsp, Liferay technology
Organizational skills	Good organizational skills
Social skills	Good skills to work in team
Languages	Italian (native language), English (medium level)
Driving license	Driving License B (car)

Extra-curriculum activities

2007 – 2009	Technical assistance and software developer for a financial web portal  Noema STI srl – Viale Brambilla, n. 58 27100 Pavia (Italy) <a href="http://www.noema.it">http://www.noema.it</a>
Jun 2007 - Oct 2007	Internship: training and development of web portal using Liferay technology  Noema STI srl – Viale Brambilla, n. 58 27100 Pavia (Italy) <a href="http://www.noema.it">http://www.noema.it</a>

Personal interests

Dancing, traveling, skating, biking, watching movies, reading

Date

19 / 04 / 2022

Signature

Chiara Toffanin