Andrea Facchinetti

Curriculum Vitae

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Personal Information

Surname, Name	Facchinetti, Andrea
Date of Birth	July 27, 1981
Place of Birth	Padova, Italy
Nationality	Italian

Current Academic Position

mar. 2017–today **Assistant Professor** (*University of Padova*, *Italy*)
Bioengineering Group (Italian ministry s.s.d. ING-INF/06 - "RTD-B" Position)

Previous Academic Positions

jan. 2009–dec. 2010 **Postdoctoral Fellow** (*University of Padova*, *Italy - before Law 30.1.2010 n.240*)
Topic: "Filtering and prediction methods for the prevention of hypo and hyperglycemic events using continuous glucose monitoring data" (Italian ministry s.s.d. ING-INF/06)

jan. 2011–dec. 2012 **Senior Postdoctoral Fellow** (*University of Padova*, *Italy - before Law 30.1.2010 n.240*)
Topic: "Continuous glucose monitoring smart sensors for the prevention of hypo and hyperglycemic events" (Italian ministry s.s.d. ING-INF/06)

jan. 2013–mar. 2014 **Senior Postdoctoral Fellow** (*University of Padova*, *Italy - after Law 30.1.2010 n.240*)
Topic: "Prevention of hypo and hyperglycemic events using continuous glucose monitoring sensors" (Italian ministry s.s.d. ING-INF/06)

apr. 2014–mar. 2017 **Assistant Professor** (*University of Padova*, *Italy*)
Bioengineering Group (Italian ministry s.s.d. ING-INF/06 - "RTD-A" Position)

Education

oct. 2005 **Master Degree (Italian Laurea Quinquennale V.O.) in Computer Engineering** (*University of Padova*, *Italy*)
Degree: 110/110 cum Laude

mar. 2009 **Ph.D. Degree in Information Engineering, curriculum Bioengineering** (*University of Padova*, *Italy*)
Ph.D. thesis title: "On-Line Filtering Algorithms for Continuous Glucose Monitoring", supervisor Prof. C. Cobelli - (Note: winner of PhD fellowship)

Summary of Scientific Production

Journal papers:	67 (14 as first author, 19 as second author, 2 as last author, all peer-reviewed)
Other publications:	>20 short-paper at international conferences (proceedings), >120 abstract presented as oral/poster at international conferences, >15 presented as oral/poster at national conferences, 3 chapters of international books, 1 chapter of a national book
Patents:	1 national and 10 internationals (5 of them sold to Dexcom Inc., San Diego, CA)
Citations:	2717 (Google Scholar) - 1925 (Scopus)
H-Index:	28 (Google Scholar) - 26 (Scopus)
National Scientific Qualification	On December 10, 2014, he received the **National Scientific Qualification ("Abilitazione Scientifica Nazionale") to function as an university Associate Professor** in the competition sector ("settore concorsuale") **09/G2** - Bioengineering

Research Activity

- **Denoising of CGM data.** Development of real-time denoising algorithms and their application to continuous glucose monitoring (CGM) data, implemented via Bayesian techniques based on state-space models and use of the Kalman filter to improve the signal-to-noise ratio (SNR). The key feature of these algorithms is that the filter parameters are estimated and optimized in real-time (automatic way) to compensate both inter- and intra-individual variability of the SNR [9, 14, 22].
- **Calibration of CGM data.** Development of real-time algorithms to calibrate and re-calibrate CGM data, implemented using the extended Kalman filter or Bayesian estimators, to improve the accuracy of CGM data. The developed algorithms are able to compensate under/overestimations due to calibration errors, the delay due to glucose diffusion in the interstitium (CGM site of measurement) and the time-variance of sensor sensitivity, thanks also to the use of regularized stochastic deconvolution [10, 18, 42, 37, 52, 53].
- **Real-time prediction of CGM data.** Creation of real-time prediction algorithms for CGM data such as autoregressive model and neural networks to predict the future glucose concentration 20-30 min ahead of time, to prevent hypo/hyperglycemic events by generating preventive alarms [1, 7, 15, 13, 21, 28, 33, 44, 64].
- **Fault-detection in the glucose sensor-insulin pump systems.** Real-time identification of faults of the glucose sensor-insulin pump system, e.g. compression artifacts of the CGM sensor or failure of the insulin pump infusion set, by using a Kalman predictor that exploits an individualized glucose-insulin kinetics model derived from patient's data (both CGM and insulin pump one) [23, 41].
- **Modeling the CGM sensor error**. Creation of a new stochastic model of the CGM sensor error, consisting of several models, each of them able to describe a specific error source: a firt-order dynamic model to describe the error due to the glucose diffusion processes from blood to interstitium, a time-varying linear regressor to describe the calibration error, and an autoregressive model to describe the measurement noise [11, 32, 36, 41, 45].
- **Retrofitting CGM data.** Development of a retrospective calibration algorithm to improve precision and accuracy of CGM data exploiting some blood glucose references, based on the above cited CGM sensor error model and implemented using bounded regularized stochastic deconvolution [2, 30, 34].
- **Quantification of glucose variability from CGM data.** Development of new methods and indices to describe and quantify glucose variability from CGM data in pre-diabetics and diabetic populations, via techniques for data variance reduction such as sparse principal component analysis [31, 35, 58] and classification algorithms (linear and nonlinear regression models, support vector machines, random forests, etc.) [47, 60, 51].
- **Type-1 diabetes decision making model.** Creation of a simulation framework, based on a physiological large-scale model of glucose-insulin dynamics of type-1 diabetes, to test the "non-adjunctive" use of CGM sensors, which includes the inter- and intra-individual variability of the physiology, of the technologies involved, of the therapies and behaviors of patients, that can be also used to optimize the rules for insulin dosing based on CGM data [43, 62].
- **Application of CGM sensors to very preterm infants.** Analysis of glucose variability from CGM data on very preterm infants. (<32 gestational weeks, <1.5 Kg) and development of real-time algorithm to identify hyperglycemic events associated to intraventricular hemorrhage events [48, 65].

Major Research Achievements

Creation of the "smart" CGM sensor

CGM sensors are affected by several error that affect both accuracy and precision of the estimates [3, 8]. We developed the concept of "smart" CGM sensor to increase the performance of commercial CGM sensors by placing in cascade to them real-time algorithms to improve precision (denoising) [9, 14], accuracy (calibration) [10, 18] and generation of preventive hypo/hyperglycemic algorithms (prediction) [1, 15]. By acquiring ad-hoc data, we demonstrated that the use of the algorithms we developed for the "smart" CGM sensor significantly improve the sensor performance at the level of the most accurate point-of-care self-monitoring blood glucose (SMBG) systems (i.e. $\leq 10\%$ relative error) [25, 24]

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Inclusion of the algorithm for the "smart" CGM sensor within the commercial Dexcom G4 sensor.

Within the collaboration with Dexcom Inc. (San Diego, CA), started in 2009 and still ongoing, which one of the most important manufacturers of CGM sensors, the algorithm for the "smart" CGM sensor we developed has been included in the new Dexcom generation sensor G4 Platinum (with software 505) in 2014 and within the G5 Mobile sensor in 2015, allowing a reduction of the sensor relative error with respect to highly-accurate blood glucose values from 13% to 9% thanks only to software changes. Thanks to the embedding of our algorithms, both G4 Platinum (with software 505) and G5 Mobiles sensors were the first to achieve a relative accuracy lower than 10% [22]

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Development of a simulator to test the "non-adjunctive" use of CGM sensors.

All commercial CGM sensors are approved for an "adjunctive" use with respect to SMBG. However, the increased performance of Dexcom' sensors obtained thanks to the embedding of the algorithms for the "smart" CGM sensor we developed (accuracy now comparable to that of SMBG systems) stimulated Dexcom Inc. to ask to the U.S. Food & Drug Administration (FDA) a change of label for their Dexcom G5 Mobile sensors, from "adjunctive" to "non-adjunctive", which means to allow diabetic patients to dose insulin on the base of CGM data without requiring any additional SMBG. To prove safety and efficacy of the non-adjunctive use of the Dexcom G5 Mobile, we developed a simulation framework, based on a large-scale model of glucose-insulin kinetics, that thanks to the inclusion of physiological, behavioral and technological inter- and intra-individual variability, allowed generating a multiple-week in-silico clinical trial over 40.000 virtual diabetic individuals simulating real-life conditions. The results of this in-silico clinical trial confirmed the safety and efficacy of non-adjunctive use of the Dexcom G5 Mobile, and where used by Dexcom Inc. to ask, and then receive, the approval by the FDA for the non-adjunctive use of their sensor (see official documents at: http://www.fda.gov/AdvisoryCommittees/Calendar/ucm503538.htm).

Teaching Activity

Courses

From a.y. 17-18 to today — **Clinical Engineering and Health Technology Assessment** (*Master Degree in Bioengineering - Univ. of Padova*)

6CFU (48 hours), hold in English.
Content: clinical engineering service; classification, purchasing, maintenance, and decommissioning of medical devices; health economic evaluations; preference elicitation methods; decision trees; Markov models; probabilistic sensitivity analysis; logistic regression; survival analysis; health technology assessment.

From a.y. 14-15 to a.y. 17-18 — **Modeling and Control of Biological Systems** (*Master Degree in Bioengineering - Univ. of Padova*)

3CFU (24 hours) of "Modeling and Control of Biological Systems", Master Degree in Bioengineering (Univ. of Padova), hold in English.
Content: linear and nonlinear parameter estimation techniques, maximum likelihood and Bayesian estimators, criteria to evaluate the goodness of fit, nonparametric deconvolution (both deterministic and stochastic).

Teaching Assistantship

From a.y. 06-07 to today — **Analisi dei Dati Biologici** (*Prof. G. Sparacino*, *Master Degree in Bioengineering*)

Co-responsible of labs on development of algorithms for denoising and prediction of biological signals (Matlab environment).
Lecturer of: "Application of the Extended Kalman Filter (EKF) to Continuous Glucose Monitoring".
(13 hours of lectures and 61 hours of lab activity

From a.y. 07-08 to a.y. 13-14 — **Medical Informatics** (*Prof. G. Sparacino*, *Master Degree in Bioengineering*)

Co-responsible of lectures on the introduction to SQL and labs on the creation via SQL of databases and queries to extract info.
(8 hours of lectures and 40 hours of lab activity

From a.y. 07-08 to a.y. 09-10 — **Biological Signal Processing** (*Prof. G. Toffolo*, *Master Degree in Bioengineering*)

Co-responsible of labs on estimation of statistical properties of random variables and processes, simulation, identification and validation of AR and ARMA models, spectral analysis, Bayesian and k-NN classifiers (Matlab environment).
(48 hours of lab activity

a.y. 13-14 — **Modeling and Control of Biological Systems** (*Prof. C. Cobelli*, *Master Degree in Bioengineering*)

Co-responsible of labs on linear and nonlinear parameter estimation techniques, maximum likelihood and Bayesian estimators, criteria to evaluate the goodness of fit, nonparametric deconvolution (both deterministic and stochastic (Matlab and Simulink environment).
(24 hours of lab activity

Tutor Junior Activity

From a.y. 06-07 to a.y. 07-08 — **Lungimiranza" Project of the University of Padova** , *Faculty of Engineering*.

winner of scholarship for a total of 200 hours of tutor junior activity, which included practical exercises on fundamental of mathematics for 1st year students of the undergraduate program in Information Engineering.

Advisory Activity

Advisor — 3 students of the Master Degree Program in Bioengineering (University of Padova)

1 student of the Undergraduate Program in Biomedical Engineering, University of Padova)

Co-advisor — 22 students of the Master Degree Program in Bioengineering, University of Padova), 2 of them awarded as best thesis by the National Group of Bioengineering (C. Zecchin in 2012 and G. Acciaroli in 2016)

2 students of the Undergraduate Program in Biomedical Engineering, University of Padova)

Projects and Research Funding

European Projects (funded under FP7 and H2020 programme)

EU–FP7 2008–2011

Personal Glucose Predictive Diabetes Advisor (DIAdvisor)

7^{th} Framework Programme, Large-Scale Integrating Project (IP); Call identifier: FP7-ICT-2007.5.1: Personal Health Systems for Monitoring and Point-of-Care Diagnostics; project total budget 9,290,661.00€, UNIPD-DEI budget 1,791,981.00€.
The bioengineering group of Padova is responsible of the work-package concerning the development of physiological models and characterization of CGM sensor error.
Role: research unit component

EU–FP7 2010–2014

Bringing the Artificial Pancreas Home (AP@home)

7^{th} Framework Programme, Collaborative Project (CP); Call identifier: FP7-ICT-2009.5.1: Personal Health Systems; project total budget 13,712,846.00€, UNIPD-DEI budget 1,509,920.00€.
The bioengineering group of Padova is responsible of the work-package concerning the development of algorithms for stochastic filtering, calibration, trend estimation and real-time glucose prediction aimed to the development of a smart CGM sensor.
Role: research unit component w

EU–FP7 2013–2016

MOdels and Simulation techniques for discovering diAbetes Influence faCtors (MOSAIC)

7^{th} Framework Programme, Collaborative Project (CP); Call identifier: FP7-ICT-2011.5.2: Virtual Physiological Human; project total budget 4,722,938.00€, UNIPD-DEI budget 740,902.00€.
The bioengineering group of Padova is responsible of the work-package concerning the development of probabilistic models of glucose regulation, physiological biomarker models, evaluation of glucose variability indices (from CGM data) and their integration within predictive models of onset and evolution of type II diabetes.
Role: research unit component

EU–H2020 2016–2019

Participatory Urban Living for Sustainable Environments (PULSE)

H2020 Framework Programme, SC1-PM-18-2016; Call identifier: H2020-SC1-2016-2017: Personalized Medicine; project total budget 4,995,515.00€, UNIPD-DEI budget 414,500.00€.
The bioengineering group of Padova is responsible of the work-package concerning the development of probabilistic multi-scale and multi-level models to predict the risk of developing type 2 diabetes and asthma.
Role: Co-investigator

EU–H2020 2018–2022

Hypoglycaemia - REdefining SOLutions for better liVEs (Hypo-RESOLVE)

H2020 Framework Programme; Call identifier:H2020-JTI-IMI2-2016-10-two-stage: Innovative Medicines Initiative (IMI); project total budget 13,324,525.00€, UNIPD-DEI budget 392,687.50€.
The bioengineering group of Padova's activity concerns to evaluate the use of and validation of in-silico modelling as a research tool to identify behavioral determinants for hypoglycemia, with the final aim to quantify, in a simulated framework, how much hypoglycemia frequency and duration is influenced by patient behavioral factors.
Role: Co-investigator

Projects funded by the Italian Ministry of Education (MIUR)

2008–2010

PRIN 2007

Title: "Simulation models and filtering/prediction techniques for the development of the artificial pancreas", principal investigator Prof. Claudio Cobelli), budget 75,000.00€.
Role: research unit component

2010–2014

FIRB 2008

Title: "Artificial pancreas: in silico development and in vivo validation of closed-loop control algorithms of glucose concentration", principal investigator prof. Lalo Magni (University of Pavia), UNIPD-DEI unit leader Prof. Chiara Dalla Man, total budget 274,000.00€.
Role: research unit component

Projects funded by the University of Padova

2014–2016

University of Padova project funding 2014 (Progetti di Ateneo)

Title: "Improving the artificial pancreas simulator for long term outpatient studies and glucose sensor testing", principal investigator Prof. Chiara Dalla Man (Univ. of Padova), total budget 53,000.00€.
Role: Co-Investigator

2017–2018 **Dept. of Information Engineering - Sponsorship for post-doc grants (BIRD 2016)**
Title: "Development of a simulation framework to design and test new type 1 diabetes insulin therapies based on continuous glucose monitoring sensors", total budget 23,593.00€.
Role: Principal Investigator

Research Consulting

2006–2008 **Menarini Diagnostics (Firenze, Italy)**
Title: "Filtering and prediction algorithms for continuous glucose monitoring sensors", budget 70,000.00€.
Topic: development of filtering and prediction algorithms for CGM sensor data acquired with the Menarini Glucoday device.
Role: research unit component working on CGM algorithms development

2008 **Abbott Diabetes Care, Alameda (CA)**
Title: "On-Line Filtering FreeStyle Navigator Time Series", budget 56,000.00€.
Topic: tuning of the filtering algorithm developed by the bioengineering group of Padova on Abbott Diabetes Care CGM sensor datasets and evaluation of their performance.
Role: research unit component working on CGM algorithms development

2009–2012 **Solianis Monitoring AG, Zurigo (Switzerland)**
Title: "Data Analysis and Development of Algorithms for Non Invasive Continuous Glucose Monitoring", budget 93,750.00€.
Topic: development of signal processing algorithms to be embedded in the noninvasive multisensor for glucose monitoring developed by Solianis Monitoring AG.
Role: research unit component working on calibration and signal processing algorithms

2011 **Dexcom Inc. (San Diego, CA)**
Title: "Agreement for consulting services and option for exclusive license", budget 75,000.00€.
Topic: tuning of filtering, calibration and prediction algorithms developed by the bioengineering group of Padova on Dexcom SEVEN Plus sensor datasets and evaluation of their performance (related patents [B3],[B4],[B5] optioned by Dexcom Inc.).
Role: Co-Investigator expert in CGM algorithms development

2012–2015 **Dexcom Inc. (San Diego, CA)**
Title: "Agreement for consulting services", budget 210,000.00€
Topic: modification of algorithms for filtering, calibration, prediction, dynamic-risk quantification, failure detection and retrospective recalibration of CGM data for optimal application on G4 Platinum sensor datasets and evaluation of their performance.
Note: the new filtering and calibration algorithms have been already embedded within the new G4AP sensor prototype, which will be marketed in late 2014.
Role: Co-Investigator expert in CGM algorithms development

2012–2015 **Dexcom Inc. (San Diego, CA)**
Contract: "Option Agreement", budget $\geq$ 200,000.00€.
Topi: Dexcom Inc. optioned patents [B3],[B4],[B5],[B7] regarding algorithms for filtering, calibration, prediction, dynamic-risk quantification, failure detection and retrospective recalibration.

2013–2014 **The Epsilon Group (Charlottesville, VA)**
Title: "Type II diabetes simulator for new drug testing", budget 25,000.00€.
Development of a type II diabetes simulator, composed by a glucose-insulin model core and a software interface, to test new drug effects on type II individuals.
Role: Co-Investigator working on the development of the software interface

2015–2018 **Dexcom Inc. (San Diego, CA)**
Contract: "Agreement for consulting services", budget 270,000.00€.
Topic: modification of algorithms for safely tuning insulin-pump basal therapy using CGM data, for dynamic-risk quantification and failure detection to be applied on new generation G6 sensor, and development, testing and optimization of CGM-based decision making strategies.
Role: Co-Investigator expert in CGM algorithms development

2015–2018 **Dexcom Inc. (San Diego, CA)**
Contract: "Option Agreement", budget $\geq$ 300,000.00€.
Topic: Dexcom Inc. optioned patents [B4],[B5],[B8] regarding algorithms for dynamic-risk quantification, failure detection and development of decision-making strategies on CGM.

2018–2021 **Dexcom Inc. (San Diego, CA)**
Contract: “Agreement for research services”, budget 1,000,000.00$.
Topic: real-time prediction of future glucose concentration from multiple data sources using linear and non-linear models, development of new algorithms for alert hypoglycemia and hypo-treatment generation, investigation of calibration-less algorithms for glucose sensors.
Role: Co-Investigator

Patents and Transfer Technology Activity

B1 **MI2008A000837** (2008)
“Metodo e dispositivo per il trattamento di dati di livello glicemico tramite filtraggio auto-adattativo, predizione del livello glicemico futuro e generazione di allarmi”
Sparacino G., **Facchinetti A.**, Cobelli C.

B2 **PCT/IB2009/051870** (2009)
"Method and device for processing glycemia level data by means of self-adaptive filtering, predicting the future glycemia level and generating alerts"
Sparacino G., **Facchinetti A.**, Cobelli C.

B3 **PCT/IB2010/054947** (2010)
"Method to Recalibrate Continuous Glucose Monitoring Data On-Line"
Facchinetti A., Guerra S., Sparacino G., De Nicolao G., Cobelli C.
Note: optioned by Dexcom Inc. from 2012 to 2015 for 20K€/year

B4 **US 13/661,393** (2012)
"Alert System for Hypo and Hyperglycemia Prevention based on Clinical Risk"
Guerra S., **Facchinetti A.**, Sparacino G., Schiavon M., Cobelli C.
Note: optioned by Dexcom Inc. in 2012 for 20K€/year, transferred to Dexcom Inc. in 2015 for 50K€

B5 **US 61/606,549** (2012)
“Method to Improve Safety Monitoring in Type-1 Diabetic Patients by Detecting in Real-Time Failures of the Glucose Sensor-Insulin Pump System"
Facchinetti A., Del Favero S., Sparacino G., Cobelli C.
Note: optioned by Dexcom Inc. in 2012 for 20K€/year, transferred to Dexcom Inc. in 2015 for 50K€

B6 **US 61/720,286** (2012)
"Systems and methods for providing sensitive and specific alarms"
Kamath A., Rack-Gomer A.L., Bhavaraju N, Hampapuram H., **Facchinetti A.**, Zecchin C., Sparacino G., Cobelli C.
Note: jointly developed with Dexcom Inc. and assigned to Dexcom Inc. in 2013 for a fee of 50K€paid to the University of Padova

B7 **PCT/IB2014/059121** (2013)
"Retrospective retrofitting method to generate a continuous glucose concentration profile by exploiting continuous glucose monitoring sensor data and blood glucose"
Del Favero S., **Facchinetti A.**, Sparacino G., Cobelli C.
Note: optioned by Dexcom Inc. in 2014 for 20K€/year, transferred to Dexcom Inc. in 2015 for 50K€

B8 **US 62/163,0911** (2015)
"Individualized multiple-day simulation model of type-1 diabetic patient decision-making for developing, testing and optimizing insulin therapies driven by glucose sensors"
Vettoretti M., **Facchinetti A.**, Sparacino G., Cobelli C.
Note: optioned by Dexcom Inc. in 2015 for 20K€/year transferred to Dexcom Inc. in 2016 for 50K€

B9 **US 2017/0273607** (2017)
"Improved accuracy continuous glucose monitoring method, system, and device"
Facchinetti A., Kovatchev B., Sparacino G., Cobelli C.
Note: jointly developed with Prof. B. Kovatchev, University of Virginia (Charlottesville, VA)

B10 **US 2017/62548328P** (2017)
"Continuous glucose monitors and related sensors utilizing mixed model and Bayesian calibration algorithms"
Vanslyke S.J., Acciaroli G., Vettoretti M., **Facchinetti A.**, Sparacino G.
Note: jointly developed with Dexcom Inc. and assigned to Dexcom Inc. in 2017 for a fee of 50K€paid to the University of Padova

B11 **US 62/756,227** (2018)
"A rel-time continuous glucose monitoring based algorithm to trigger carbohydrates assumption to prevent/mitigate hypoglycemic events"
Camerlingo N., **Facchinetti A.**, Del Favero S., Vettoretti M., Cappon G., Sparacino G.

Membership to International/National Research Groups

- Co-founder of the Italian Society of Medical Informatics (SIBIM)
- Member of IEEE Engineering in Medicine and Biology Society
- Member of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR)

Chair/Moderator Activity for, Organizer of, and Partecipation to International Conferences

Chair and Moderator activity

- Co-Moderator of the session entitled "How Good Does CGM Need to be for a Primary Indication to Replace SMBG?" at the 15^{th} Diabetes Technology Meeting (DTM), Bethesda (MD, USA), Oct 22–24, 2015
- Co-Moderator of the session entitled "Digital Diabetes Data Science" at the 18^{th} Diabetes Technology Meeting (DTM), Bethesda (MD, USA), Nov 8–10, 2018

Organization of Conferences/Workshops

- Program Committee Member of the 3rd International Workshop on Knowledge Discovery in Healthcare Data Stockholm (Sweden), Jul 13, 2018

Invited Talks at International Conferences

- "Algorithms to enhance CGM performance", 1^{st} Artificial Pancreas at Home Conference, Barcelona (Spain), Feb 8, 2012
- "Sensor Accuracy and Device Calibration Leading to CGM-based Treatment Decisions", Workshop: "The Next Step in Continuous Glucose Monitoring" della 76^{th} American Diabetes Association (ADA) Conference, New Orleans (LA, USA), June 11, 2016
- "Continuous glucose monitoring: past, present, and future", Workshop: "The Next Step in Continuous Glucose Monitoring", Workshop "Diabetes: Signals, Modeling and Control", IEEE Multi-Conference on Systems and Control 2016, Buenos Aires (Argentina), Sept 19, 2016
- "Is calibration necessary for CGMs?", Workshop D "Metrics for Diabetes" at the 16^{th} Annual Diabetes Technology Meeting 2016, Bethesda (MD, USA), Nov 10, 2016

International Conferences: Oral Presentations

- "Reconstruction by deconvolution plasma from continuous glucose monitoring sensor data", 28^{th} IEEE Engineering in Medicine and Biology Conference (EMBC), New York City (NY, USA), Aug 30–Sep 4, 2006

- "Real-time self-adaptive prediction algorithm for CGM data evaluated by combining different indexes", 3^{rd} International Conference on Advanced Technologies and Treatments for Diabetes (ATTD), Basel (Switzerland), Feb 10–13, 2010
- "Algorithms to enhance CGM performance", 1^{st} Artificial Pancreas at Home Conference, Barcelona (Spain), Feb 8, 2012
- "Algorithms for smart CGM sensor: the AP@home project experience", 5^{th} International Conference on Advanced Technologies and Treatments for Diabetes (ATTD), Barcelona (Spain), Feb 8–11, 2012

International Conferences: Poster Presentations

- From 2006 to 2018, consecutive participations as presenter to the Annual Diabetes Technology Meeting (from 5^{th} to 18^{th} edition), international conference on diabetes technology
- From 2009 to 2019, consecutive participations as presenter to the International Conference on Advanced Technologies and Treatments for Diabetes (from 2^{nd} to 12^{th} edition), international conference on diabetes technology
- Participation as presenter to 28^{nd} (2006) and 33^{rd} (2012) IEEE Engineering in Medicine and Biology Conference (EMBC), international conference on biomedical engineering organized by the IEEE Engineering in Medicine and Biology Society'

Awards

2005 Finalist at the Start Cup Veneto 2005 competition with the project Move2know regarding an innovative force and pressure platform.

2011 Nominated as "Outstanding Young Researcher" in the candidate selection procedure for the Offelli Award of the Department of Information Engineering, Univerisity of Padova

2016 Gold Prize (best abstract) at the 16^{th} Annual Diabetes Technology Meeting, Bethesda (MD), Nov 10-12, 2016.
Acciaroli G., Palombit A., Di Nunzio G., **Facchinetti A.**, Sparacino G., Cobelli C., "Good accuracy of CGM-based glucose variability indices for IGT and T2D classification"

2017 Bronze Prize (third best abstract) at the 17^{th} Annual Diabetes Technology Meeting, Bethesda (MD), Nov 2-4, 2017.
Acciaroli G., Vettoretti M., Vanslyke S.J., Garcia A. **Facchinetti A.**, Sparacino G., "Bayesian Calibration Algorithm for Next Generation Dexcom Sensor: 8.4% MARD with one Calibration Every 4 Days"

Editorial Activity

Co-Guest Editor Sensors - Special issue: "Glucose Sensors: Revolution in Diabetes Management" (2016)

Lead Guest Editor Sensors - Special issue: "Wearable Sensors in Healthcare: Methods, Algorithms, Applications" (2019)

Referee Referee for several international peer-reviewed journals, including IEEE Transactions on Biomedical Engineering, Medical & Biological Engineering & Computing, Diabetes Care, Diabetes Technology & Therapeutics, Sensors, Computer Methods and Programs in Biomedicine, PLoS One, IEEE Transactions on Information Technology in Biomedicine, Computers in Biology and Medicine, IEEE Journal of Biomedical Health and Informatics, Biomedical Signal Processing and Control, Diabetes, Soft Computing, Information Sciences, Journal of Biomedical Informatics, BMC Medical Informatics and Decision Making, Scientific Reports - Nature.

Referee for Grant Applications

Evaluator — 014-ABEL-IM-2014A call for individual mobility of researchers of the NILS Science and Sustainability programme - NILS is funded within the protocol 30b of the financial mechanism of the European Economic Area and on the frame of the memorandum of understanding signed by Spain, Norway, Iceland and Liechtenstein, with Universidad Complutense de Madrid being the programme operator (2014).

Evaluator — Strategic University Reasearch Project call 2018, Università Campus Bio-Medico di Roma (UCBM) (2018).

Invited Short-Term Visits

June 2007 — "Visiting Scientist" at the Department of Psychiatry and Neurobehavioral Sciences (University of Virginia, Charlottesville, VA) to work with Prof. Boris Kovatchev for the development of glucose prediction algorithms for CGM data.

July 2011 — "Visiting Scientist" at Dexcom Inc. (San Diego, CA), one of the greatest continuous glucose monitoring manufacturer, for the integration of filtering, calibration and prediction algorithms developed by the bioengineering group of Padova into the Dexcom SEVEN Plus sensor.

July 2012 — "Visiting Scientist" at Dexcom Inc. (San Diego, CA), for the integration of filtering, calibration and prediction algorithms developed by the bioengineering group of Padova into the new generation Dexcom G4 Platinum sensor.

International Academic Collaborations

As documented by publication and project lists, several collaborations with international academic groups, including: Prof. B. Kovatchev (University of Virginia, VA), Prof. F. Doyle III (Harvard University, Boston, MA), Dr. Renard (University Hospital of Montpellier, FR), Dr. Y. Kudva and Dr. A. Basu (Mayo Clinic, Rochester, MN), Prof. G. De Nicolao and Prof. L. Magni (University of Pavia, IT), Prof. Garry Steil (Boston Children's Hospital, Boston, MA), Prof. Josep Vehi (Universidad de Girona, Spain), Prof. Jorge Bondia Company (Universidad Politecnica de Valencia, Spain), Prof. Maria Teresa Arredondo Waldmeyer (Universidad Politecnica de Madrid, Spain), Dr. Pau Herrero (Imperial College London, UK).

Member of Committees and Duties within the University of Padova - Dept. of Information Engineering

2018–today — Member of "Giunta di Dipartimento"

2018–today — Member of Internationalization Committee

2018–today — Responsible for 10 Erasmus student exchange programs with the following institutions: Technische Universitat Graz, Universidad Politecnica de Madrid - ETSIT, Universidad Pública de Navarra (Pamplona), Reykjavik University, Universidade de Coimbra, Universidade do Porto, Technical University of Lodz, Chalmers Tekniska Hogskola (Goteborg), KTH Royal Institute of Technology (Stockholm), University of Dundee

2018–today — Responsible of bilateral student exchange programs with the Dept. of Electrical and Computer Engineering of the Seoul National University (Seoul, South Korea)

2017–today — Contact Professor of the Teaching Committee for M.Sc. Degree in Bioengineering

2018–today — Member of the monitoring panel for the PROACTIVE-project "Fully printed organic array of bidirectional reference-less sensors for neural interfacing" (DEI - call 2018)

2017–today — Member of the "Collegio dei Docenti" for the PhD Course in Information Engineering

Full Papers on International Peer-reviewed Journals

[1] G. Sparacino, F. Zanderigo, S. Corazza, A. Maran, **A. Facchinetti**, and C. Cobelli. Glucose concentration can be predicted ahead in time from continuous glucose monitoring sensor time-series. *IEEE Trans Biomed Eng*, 54(5):931–937, May 2007.

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