Andrea Facchinetti received the Master degree (110/110 cum laude) in Computer Engineering in 2005 and the PhD degree in Information Engineering (curriculum Bioengineering) in 2009, both from the University of Padova, Padova (Italy) (hereafter, UNIPD). From 2009 to 2014 he has been Postdoc fellow, and from 2014 to 2020 Assistant Professor in Bioengineering (RTDa + RTDb position), both positions at UNIPD. He is currently **Associate Professor of Bioengineering** at the Department of Information Engineering (UNIPD).

Research activity, major achievements and publication summary

Andrea Facchinetti's research activity is mainly focused on the development of signal processing algorithms applied to glucose concentration time-series acquired with continuous glucose monitoring (CGM) sensors. In particular: denoising of CGM data via Bayesian techniques; calibration of CGM data via extended Kalman filter or Bayesian estimators; real-time forecasting hypo/hyperglycemic events by autoregressive model and neural networks; identification of faults and compression artifacts in CGM data by autoregressive models and Kalman filters; decision support systems for the personalization CGM-based insulin dosing and hypotreatment ingestions using machine learning techniques.

Publication summary

The quality of his research activity is supported by 89 journal papers (13 as first author, 20 as second author, 10 as last author, all peer-reviewed), >25 short-papers at international conferences, >140 abstracts presented as oral/poster at international conferences, 3 chapters in international books, 2 chapter in national books. According to Scopus, Andrea Facchinetti has H-Index 31 and his papers count 2953 citations.

Third mission and Technology Transfer Activity

He is co-inventor of 1 national and 14 international patent applications. Of note, 6 of them have been sold to Dexcom Inc. (one of the largest manufacturers of glucose sensors).

Projects and Research Funding

FP7 and H2020 projects: "Personal Glucose Predictive Diabetes Advisor" (DIAdvisor) (2008-2011); "Bringing the Artificial Pancreas Home" (AP@home) (2010-2014); "MOdels and Simulation techniques for discovering diAbetes Influence faCtors" (MOSAIC) (2013-2016); "Participatory Urban Living for Sustainable Environments" (PULSE) (2016-2020); "Hypoglycaemia - REdefining SOLutions for better liVEs" (Hypo-RESOLVE) (2018-2022); "BRinging Artificial INTelligencE home for a better cAre of amyotrophic lateral sclerosis and multiple SclERosis" (BRAINTEASER) (2021—2024).

Projects funded by MIUR: "Simulation models and filtering/prediction techniques for the development of the artificial pancreas" (PRIN 2007); "Artificial pancreas: in silico development and in vivo validation of closed-loop control algorithms of glucose concentration" (FIRB 2008).

Projects funded by UNIPD: "Improving the artificial pancreas simulator for long term outpatient studies and glucose sensor testing" (funded by UNIPD, 2014); "Development of a simulation framework to design and test new type 1 diabetes insulin therapies based on continuous glucose monitoring sensors" (BIRD 2016 funded by DEI); "Bioengineering Center for Pediatric Diabetes (BCPD)" (CARIPARO 2016).

Research funding received by companies: Menarini Diagnostics (Firenze, Italy) (2006-2008); Abbott Diabetes Care, Alameda (CA) (2008); Solianis Monitoring AG (Zurich, Switzerland) (2009-2012); Dexcom Inc. (San Diego, CA) (2011-ongoing).

Teaching and advisory activity

He is currently teaching at Master Degree in Bioengineering at UNIPD the courses of "Biomedical signal processing" and "Clinical Engineering and Health Technology Assessment", as well as the course "Statistical learning for big data in medicine" at the PhD school in Information Engineering. He is advisor of 2 post-docs and 5 PhD students. He has been advisor of 16 students of the Master Degree in Bioengineering and 20 students of the Bachelor Degree in Biomedical Engineering.

Other activities

He is co-founder and member of the National Group of Bioengineering 2018 (GNB), co-founder and member of the Italian Society of Medical Informatics (SIBIM), member of IEEE Engineering in Medicine and Biology Society , ember of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR), and member of the Health Technology Assessment Division of the International Federation of Medical & Biological Engineering.

He has been chair/moderator at the 15th and the 18th Diabetes Technology Meeting hold in Bethesda (MD, USA), one of the major conferences in the field of diabetes technologies.

He has been also member of the program committee of the 3rd and 5th International Workshops on Knowledge Discovery in Healthcare Data (2018 and 2020), and of the program committee of the 3rd International Conference on Biological Information and Biomedical Engineering (BIBE2019).

He has been also invited to talk at International Conferences in the field of diabetes technologies, i.e. 1st Artificial Pancreas at Home Conference (Barcelona, Spain - 2012), 76th American Diabetes Association (ADA) Conference (New Orleans, LA – 2016), IEEE Multi-Conference on Systems and Control (Buenos Aires, Argentina – 2016), and 16th Annual Diabetes Technology Meeting (Bethesda, MD- 2016).

Finally, is co-guest editor of several special issues on Sensors MDPI related to diabetes technologies: "Glucose Sensors: Revolution in Diabetes Management" (2016), "Wearable Sensors in Healthcare: Methods, Algorithms, Applications" (2019), and "Recent Advances in Continuous Glucose Monitoring Sensors" (2021).