

## Professional Experience

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- **F Hoffman-La Roche**, Basel, Switzerland
  - **Senior data analyst and data team lead**  
FEB 2019 - PRESENT
    - Lead the day to day activities of the data analysis team for the Multiple Sclerosis disease area in the pRED Digital Biomarkers department.
    - Provide input and contribute to the development of the Floodlight MS solution, a regulated Software as a Medical Device for the measurement of cognitive, upper and lower limbs functional domains in Multiple Sclerosis: • Represent the data team in the Floodlight program activities and manage stakeholders • Support from a data R&D perspective the improvements of the Floodlight solution capabilities to measure MS: develop new digital tests and improve the existing ones; create a disease functional model to link MS symptoms to digital features; longitudinal and cross-sectional data analysis; exploratory research; digital signal processing • Translate the learnings from R&D findings into requirements and functional specifications for the Product Development Team • Co-develop and support execution of the strategy for the analytical validation to support submission to regulatory authorities, including evidence generation with robot testing and equivalency testing in a BYOD setting • Responsible for end-to-end data requirements and data flow for delivering data transfers according to FAIR principles (develop FFS and data contracts governing the data pipeline, define data quality checks and co-develop CSV processes for data integrity) • Write patents to protect IP and guarantee freedom to operate for the company • Disseminate scientific findings in international and technical conferences and peer reviewed journals.
    - Developed a signal processing pipeline for PPG signal analysis to calculate HRV metrics for measuring stress and anxiety in Autism Spectrum Disorder patients.
- **Biovotion (Now part of Biofourmis)**, Zurich, Switzerland
  - **Senior data scientist**  
DEC 2016 - JAN 2019
    - Conceptualised and developed a digital framework for characterising the influence of behaviour on health along different time scales using physiological and contextual data sources
    - Developed software within agile methodologies in a medical regulated environment.
  - **Data scientist**  
SEP 2014 - NOV 2016
    - Developed and deployed algorithms for medical grade vital signs monitoring on the upper arm with PPG technology (pulse rate, SpO<sub>2</sub>, respiratory rate, energy expenditure).
    - Co-development of protocols for clinical trials used to collect data for vital signs validation and report creation for CE medical and FDA clearance submissions (The Everion device is listed as a Class II medical device exempt from the 510(k) notification)
- **M31 (WearIT)**, Padova, Italy
  - **Data scientist**  
NOV 2014 - AUG 2015
    - Lead of analytics activities for a wearable smart-watch with a sport product-market fit. Including GPS and IMU sensors integration and application of supervised machine learning for gesture detection from inertial sensors. Used physiological models for non-invasive energy expenditure estimation in professional athletes for high performance sports.
- **National University of Ireland**, Maynooth, Ireland
  - **Post-doc researcher**  
JUL 2013 - AUG 2014
    - Research on the statistical properties of different methods to select informative inputs in regression and classification problems. Machine-learning and statistical analysis for business intelligence in industrial applications. (Partners: SeaGate Technology LLC., Trend Technologies Ltd. and Amgen)

- **University of Padova**, Padova, Italy
  - **Ph.D. in Information Technology**  
 JAN 2010 - JAN 2013  
 “Non-invasive continuous glucose monitoring: Identification of models for multi-sensor systems”  
<http://goo.gl/l4DpBF>.  
 Algorithm development and application of machine learning tools for continuous physiological monitoring: Non-Invasive: Glucose and Stress (Partner: Biovotion AG,), EEG based drowsiness detection. Invasive: Improved accuracy of Intensive Care Unit device (Glucoclear) for glucose monitoring (Partner: DexCom Inc.)
  - **Research fellow**  
 APR 2009 - DEC 2009 / FEB 2013 - JUN 2013  
 –Developed algorithms and models for non-invasive continuous glucose monitoring.  
 —Improved the accuracy of glucose sensors and developed algorithms for drowsiness monitoring based on single channel EEG analysis

## Education

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- Jan 2010-Dec 2012 — **Ph.D. in Information Technology** at the University of Padova, Italy
- Oct 2006-Mar 2009 — **M.Sc. (cum laude) in Bioengineering** at the University of Padova, Italy
- Oct 2003-Sep 2006 — **B.Sc. in Biomedical Engineering** at the University of Padova. Italy

## Skills

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- **Soft**  
 Excellent written and spoken communicator, team work, self-starter, empathy, self-motivated.
- **Work methodologies**  
 Hybrid scrum and kanban methodologies used to lead a data analysis team: agile ceremonies, ticketing system (JIRA), maintaining documentation (wiki), reproduce results and develop code with software versioning systems (GIT, SVN).
- **Software**  
 Matlab, Python, R, C, SQL
- **Machine Learning**  
 Supervised linear and non-linear regression and classification methods (Deep ANN including GAN architectures with tensorflow and keras, SVM, Regularization and Bayesian approaches to sparse problems, Kernels). Unsupervised data analysis methods (K-means, DBscan, HMM, t-sne).
- **Digital Signal Processing and System identification**  
 On-line time series analysis (filter design, wavelet, prediction, FFT, ARIMA models, etc.).
- **Feature Extraction and selection**  
 Univariate and multivariate tools (Spectral analysis, Chaos theory, PCA, ICA).
- **Data Visualization**  
 Principles of data visualization and display of quantitative information according to E. Tufte work.

## Additional information

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- Authors of 11 scientific publications in peer-reviewed scientific journals (5 as first author) and 18 contributions to international engineering and medical conferences (see [google scholar profile](#) and [mattiabl.github.io](#)). Co-inventor of 6 patents.
- Chartered Engineer qualification obtained in 2012.

## Languages

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Italian: mother tongue      English: fluent (C1)      German: basic (A2)

## Hobbies and Memberships

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Ski and triathlon lover, espresso and pizza addicted.  
 Active member of the Italian and Swiss Blood Donor Associations.