Johannes de Bie

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Specialties

Clinical use of ECG's, ECG and vital signs monitoring, ECG-related algorithm development, Device-Human Interfaces and Usability, Medical Device standards, Project management, Technical Communication, Healthcare and Drug Trial Workflows.

Experience

Adjunct Professor at the University of Bologna (part time)
Dept. of Electrical, Electronic, and Information Engineering "Guglielmo Marconi"
February 2022 – today

- Teaching position course "Context Sensitive Design of Medical Devices" in the biomedical engineering Master of Science curriculum.

Consultant on development of Medical Devices, free lance
February 2022 – today

- Algorithm development, regulatory aspects, risk analysis, usability analysis, clinical evaluation studies.

Chief Scientific Officer at Mortara Instrument, Inc
After acquisition by Hillrom: Chief Scientist - Cardiology
January 2016 – December 2021

- Advice Senior Staff on scientific and clinical advances and trends
- Responsible for advancement of clinical algorithm and parameter development
- Oversee clinical validations and investigations
- Manage Algorithm Development Group

Senior Vice President of Global Engineering at Mortara Instrument, Inc
January 2012 – December 2015

- Represent Global Engineering in Mortara Instrument Senior Staff
- Manage Mortara engineering groups in Bologna, Italy and Milwaukee, USA
- Responsible for all Medical Device development at Mortara Instrument

Vice President of Clinical Development at Mortara Instrument, Inc.
July 2010 – December 2011

- Clinical requirements definition of products
- Usability evaluation
- Clinical data collection and evaluation
- Scientific publications together with university and hospital partners
- Support of sales force and service engineers for clinical issues
- Manage Mortara design verification effort
- Continue to represent Mortara on Italian medical device standards bodies.

Director of Research and Development at Mortara Rangoni Europe
November 1991 – July 2010

- Development of the Mortara Surveyor line of 12-lead monitoring products, which includes a CCU bedside monitor and an integrated 12-lead telemetry central station, repeater and review stations. This system is currently one of the industry standards for data collection for TQT-studies. It provides protocol management, arrhythmia analysis, 12-lead ECG export in FDA A-ECG format, export to Holter analysis system.
- Management of the software development group at Mortara Rangoni Italy.
- Support of sales force and service engineers

Technical Director of Heart Station Leiden University Hospital, The Netherlands
April 1985 – November 1991

- Introduction of Central computerized ECG management in the hospital
- Development of the ECG management system to Hospital Information System interface
- Management of the Heart Station equipment, workflow and personnel
- Introduction of Holter analysis in the hospital
- Support of arrhythmia research
- Development of a computerized ECG reading course for the Dutch Heart Foundation

Research Fellow, Psychology Dept. Brooklyn College, New York
March 1984 - December 1984

- Development of software for research in the development of eye movements in infants
- Maintenance of laboratory computer equipment

Research Fellow, Delft University of Technology, Applied Physics Dept
March 1980 – March 1985

- Research of the control system of small eye movements, resulting in PHD thesis

Lab Assistant, Delft University of Technology, Applied Physics Dept
Jan 1978 – Feb 1980

- Assist undergraduate students during laboratory experiments
- Help design and set up lab experiments
- Score students experimental reports

Education

Delft University of Technology
PhD, Applied Physics, thesis: "The control of small eye movements". 1980 - 1985
Delft University of Technology
MS, Applied Physics, thesis: "A system for the analysis of arm movements". 1975 - 1980

Honors and Awards

Coordinator of working group "ECG" of technical committee 62D "Medical Devices" for the International Electrical Committee, Italy; 2008 -2015.

Organizer of International Congress "Computers in Cardiology" 2008 in Bologna, Italy.
Member of Local Organizing Committee Congress "CinC" 2020 in Rimini, Italy

Member of the Board of Directors of the International Society of Computerized Electrocardiology (www.isce.org); 2017 - 2020

Students MSc (correlatore tesi di laurea)
Facoltà di ingegneria elettronica, Università di Bologna

Marco Mezzacasa, 1993-94: Progetto e sviluppo di un sistema per il calcolo della portata cardiaca con tecnica di termodiluizione. Relatore Claudio Lamberti

Matteo Flamigni, 1995-96: Proposta di un metodo che utilizza il tracciato ECG per la costruzione della forma d'onda del respiro. Relatore: Claudio Lamberti

Agnese Vitalina Travaglini, 1996-97: Verifica sperimentale di un metodo per l'estrazione della forma d'onda del respiro dal segnale ECG. Relatore Claudio Lamberti.

Giulio Rocco, 1998-99: Estrazione della forma d'onda del respiro dal segnale ECG per il monitoraggio della frequenza respiratoria. Relatore Claudio Lamberti.

Roberto di Fiore, 1998-99: Progetto e sviluppo di un sistema per l'estrazione della forma d'onda del respiro dal segnale ECG. Relatore Claudio Lamberti

Stefania Vecchietti, 1999-2000: Studio dell'influenza della terapia con rene artificiale sui parametri elettrocardiografici. Relatore Silvio Cavalcanti

Francesco Gambi, 1999-2000: Progetto e sviluppo di un sistem per il monitoraggio del respiro e il riconoscimento delle apnee dal segnale ECG. Relatore Claudio Lamberti.

Barbara Mazzanti, 2001-02: Sviluppo di procedure per la stima della frequenza respiratoria in base al segnale EDR (ECG-derived-respiration). Relatore Claudio Lamberti

Andres Miguel Camarda, 2001-02: Valutazione dell'accuratezza di un algoritmo per la stima della portata cardiaca. Relatore Claudio Lamberti

Pythagore Tchuidjang, 2007-07: Miglioramento di un algoritmo di riconoscimento automatico del battito cardiaco. Relatore Cristiana Corsi

Students PhD

Ricardo Salinas Martinez. MY-ATRIA (MultidisciplinarY training network for ATrial fibRillation monItoring, treAtment and progression), EU Horizon 2020 Marie Skłodowska-Curie grant agreement No.766082, PhD at Lund University Sweden planned for Spring 2024. Prof. Leif Sörnmo and Prof. Frida Sandberg.

Publications

2023

Ricardo Salinas-Martínez, Nicoletta Marzocchi, Johannes de Bie, Frida Sandberg: Detection of Brief Episodes of Atrial Fibrillation in continuous 12-lead ECG recordings using an algorithm for computerized resting ECG interpretation combined with convolutional neural network for reducing false detections. ISCE 2023 conference presentation, J. Electrocardiology 78 (May-June 2023) 18-19, doi:10.1016/j.jelectrocard.2023.03.051

Nicoletta Marzocchi, Johannes de Bie, Patrick Noffke: Impact of 12-lead ECG annotation quality on automatic interpretation algorithms based on neural networks. ISCE 2023 conference presentation, J. Electrocardiology 78 (May-June 2023) 32-33, doi:10.1016/j.jelectrocard.2023.03.069

2022

Marcos Usón, johannes de bie, Roberto Maestri, Maria Teresa La Rovere, Juan Pablo Martínez, Alba Martin: Cosinor-Based Circadianity of T-Wave Alternans Activity as a Predictor of Sudden Cardiac Death in Heart Failure: a Post-Hoc Analysis of the GISSI-HF Holter Substudy. . Proc Comput Cardiol 2022, doi:10.22489/CinC.2022.341

2021

Salinas-Martínez R, de Bie J, Marzocchi N, Sandberg F: Detection of Brief Episodes of Atrial Fibrillation Based on Electrocardiomatrix and Convolutional Neural Network. Front Physiol. 2021 Aug 25;12:673819. https://doi.org/10.3389/fphys.2021.673819

2020

Ricardo Salinas Martínez, Johan De Bie, Nicoletta Marzocchi, Frida Sandberg: Automatic Detection of Atrial Fibrillation Using Electrocardiomatrix and Convolutional Neural Network
Proc Comput Cardiol 2020. https://doi.org/10.22489/CinC.2020.170

J.De Bie, I.Diemberger, J.W.Mason: Comparison of PR, QRS, and QT interval measurements by seven ECG interpretation programs. J. Electrocardiology 63 (2020) 75-82
https://doi.org/10.1016/j.jelectrocard.2020.10.006

J.De Bie, C.Martignan, G.Massaro, I.Diemberger: Performance of seven ECG interpretation programs in identifying arrhythmia and acute cardiovascular syndrome. J. Electrocardiology 58 (2020) 143-149. https://doi.org/10.1016/j.jelectrocard.2019.11.043

2019

J. De Bie, I. Diemberger: Interpretation and measurement consistency of seven ECG computer programs. Journal of Electrocardiology 57:S99 November 2019. https://doi.org/j.jelectrocard.2019.08.021

I Diemberger, Giulia Massaro, C Martignani, A. Angeletti, Johan De Bie: P3749 Discrimination between normal and abnormal electrocardiograms: agreement of seven built-in automatic diagnostic programs in a cohort of >2000 12-lead traces. European Heart Journal 40(Supplement_1) October 2019. https://doi.org/eurheartj/ehz745.0601

I Diemberger, C Martignani, Giulia Massaro, Stefano Lorenzetti, Johan De Bie: P2840 Discrimination between sinus rhythm and atrial fibrillation/flutter: reliability of seven different built-in automatic-diagnostic computer programs in a cohort of >2000 12-lead electrocardiograms European Heart Journal 40(Supplement_1) October 2019. https://doi.org/eurheartj/ehz748.1150

2018

Paul Kligfield, Fabio Badilini, Isabelle Denjoy, Saeed Babaeizadeh, Elaine Clark, Johan De Bie, Brian Devine, Fabrice Extramiana, Gianluca Generali, Richard E Gregg, Eric D Helfenbein, Jan A Kors, Remo Leber, Peter Macfarlane, Pierre Maison-Blanche, Ian Rowlandson, Ramun Schmid, Martino Vaglio, Gerard van Herpen, Joel Xue, Brian Young, Cynthia L. Green. Comparison of automated interval measurements by widely used algorithms in digital electrocardiographs. American Heart Journal 200 February 2018. https://doi.org/10.1016/j.ahj.2018.02.014

2017

Johan de Bie, W. Brian Chiu, David W. Mortara, Cristiana Corsi, Stefano Severi: Quantification of hERG Potassium Channel Block from the ECG. Proc Comput Cardiol 2017 (Rennes, France). https://doi.org/10.22489/CinC.2017.239-123

W. Brian Chiu, PhD, Johan de Bie, PhD, David W. Mortara, PhD, FACC: The J to T-peak interval as a biomarker in drug safety studies: A method of accuracy assessment applied to two algorithms. J. Electrocardiology 50 (2017) 758-761. https://doi.org/10.1016/j.jelectrocard.2017.07.011

Jean-Philippe Couderc, Shiyang Ma, Alex Page, Connor Besaw, Jean Xia, W Brian Chiu, Johan De Bie, Jose Vicente, Martino Vaglio, Fabio Badilini, Saeed Babaeizadeh, Cheng-hao Simon Chien, Mathias Baumert: An Evaluation of Multiple Algorithms for the Measurement of the Heart Rate Corrected JTpeak Interval. Journal of Electrocardiology 50(6) September 2017.
https://doi.org/10.1016/j.jelectrocard.2017.08.025

Cristiana Corsi, Marilisa Cortesi, Giulia Callisesi, Johan De Bie, Carlo Napolitano, Antonio Santoro, David Mortara, Stefano Severi: Noninvasive quantification of blood potassium concentration from ECG in hemodialysis patients. Scientific Reports 7(1):42492 February 2017. https://doi.org/10.1038/srep42492

2014

Johan de Bie, David W. Mortara, Todd F. Clark: The development and validation of an early warning system to prevent the acquisition of 12-lead resting ECG's with interchanged electrode positions. J. Electrocardiology 47 (2014) 794-797.
DOI: 10.1016/j.jelectrocard.2014.08.015

2013

Paul Kligfield, Fabio Badilini, Ian Rowlandson, Joel Xue, Elaine Clark, Brian Devine, Peter Macfarlane, Johan de Bie, David Mortara,Saeed Babaeizadeh, Richard Gregg, Eric D Helfenbein, Cynthia L Green: Comparison of automated measurements of electrocardiographic intervals and durations by computer-based algorithms of digital electrocardiographs. American heart journal 02/2014; 167(2):150-159.e1. DOI: 10.1016/j.ahj.2013.10.004

2012

Cristiana Corsi, Johan De Bie, David Mortara, Stefano Severi Innovative Solutions in Health Monitoring at Home: The Real-Time Assessment of Serum Potassium Concentration from ECG Lecture Notes in Computer Science 01/2012; 7251:116-123. DOI: 10.1007/978-3-642-30779-9_15

2011

Cristiana Corsi, Stefano Severi, Mark Haigney, Johan De Bie, David Mortara Noninvasive quantification of blood potassium concentration from electrocardiogram analysis Journal of Electrocardiology - J Electrocardiol 01/2011; 44(2). DOI: 10.1016/j.jelectrocard.2010.12.013

2010

Severi S, Corsi C, Haigney M, DeBie J, Mortara D: Noninvasive Potassium Measurements from ECG Analysis during Hemodialysis Sessions. Proc Comput Cardiol 2009 (Park City, USA) 821-824, 2010

2009

Tchuidjang P, Corsi C, De Bie J: An Optimal Automatic Beat Detection Algorithm Based on Detector Switching. Proc Comput Cardiol 2008 (Bologna, Italy): 249-252, 2009

2008

Hilbel T, Brown BD, De Bie J: Innovation and Advantage of the DICOM ECG Standard for Viewing, Interchange and Permanent Archiving of the Diagnostic Electrocardiogram. Proc Comput Cardiol 2007 (Durham, USA): 633-636, 2008

2005

Maarek V, Lamberti C, De Bie J, Pirini G: Intensive Care Uniti Alarm Repeater and ECG Viewer on a WIFI-Enabled Personal Digital Assistant. Proc Comput Cardiol 2004 (Chicago, USA): 641-644, 2008

2004

Mazzanti B, Lamberti C, De Bie J: Validation of an ECG-Derived Respiration Monitoring Method. Proc Comput Cardiol 2003 (Tessaloniki, Greece): 613-616, 2004

2001

Burattini L, Bellagamba G, Balestrini F, Fratalocchi N, Pennacchietti L, De Bie J: Repolarization Variability in 24-Hour Holter ECG. Proc Comput Cardiol 2000 (Cambridge , USA): 367-370, 2001

1994

Janssen MJA, Swenne CA, De Bie J, Ter Heide H, Van Bemmel JH, Rompelman O: Methods in heart rate variability analysis: may the ventricular or the pulse rhythm be used as a substitute for the atrial rhythm?. High Blood Pressure and Cardiovascular Prevention 3: 23-29, 1994

1993

Janssen MJA, De Bie J, Swenne CA, Oudhof J: Supine and standing sympathovagal balance in athletes and controls. Eur J Appl Physiol Occup Physiol 67: 164-167, 1993

Janssen MJA, Swenne CA, De Bie J, Rompelman O, Van Bemmel JH: Methods in heart rate variability analysis: which tachogram should we choose? Comput Methods Programs Biomed 41: 1-8, 1993

1992

Tuinenburg AE, Bootsma M, Janssen MJA, De Bie J, Swenne CA, Jacobs MC, Lenders JWM: Heart rate and heart rate variability during 10- and 30-minute episodes of lower body negative pressure. Proc Comput Cardiol 1991 (Venice, Italy): 333-336, 1992

Ramlal D, Van Herpen G, De Bie J, Van der Laarse A, Bosker HA, Bruschke AVG: The time course of ECG-Parameters has no quantitative siginicance in the thrombolytic era. Proc Comput Cardiol 1991 (Venice, Italy): 381-384, 1992

1991

Janssen MJA, Swenne CA, De Bie J, Manger Cats V, Bruschke AVG: Average heart rate, heart rate variability and the sympathovagal balance. Proc Comput Cardiol 1990 (Chicago, IL, USA): 75-78, 1991
Swenne CA, Janssen MJA, De Bie J, Manger Cats V, Bruschke AVG: Differences in the atrial, the ventricular and the digital cardiac rhythm. Proc Comput Cardiol 1990 (Chicago, IL, USA): 67-70, 1991

De Bie J: P-Wave Trending: A Valuable Tool for Documenting. Supraventricular Arrhythmias and AV-Conduction Disturbances. Proc Comput Cardiol 1990 (Chicago, IL, USA): 511-514, 1991

1990

Swenne CA, Janssen MJA, De Bie J, Manger Cats V: The cardiac rhythm as a measure for the neurohumoral control of the heart. In: Proc Biosignal '90. House of Technology, Brno, p 94, 4 pp, 1990
Swenne CA, Janssen MJA, De Bie J, Manger Cats V, Bruschke AVG: Assessment of neurohumoral influences on the heart by cardiac cycle time aalysis. Proc Comput Cardiol 1989 (Jerusalem, Israel): 53-56, 1990

 Johan De Bie, Gerard van Herpen, G.T. Meester, F.L. Meijler, C. Zeelenberg: AENEAS: a standard for ECG-management and exchange in the Netherlands. Proc Comput Cardiol 1989 (Jerusalem, Israel). DOI: 10.1109/CIC.1990.130546

1989

Swenne CA, Janssen MJA, De Bie J, Manger Cats V, Bruschke AVG: Neurohumoral modulation of arrhythmogeneity: possible role of cardiac cycle time analysis. Abstract Voorjaarsverg Ned Ver Cardiol, in ?, 1989

1987

De Bie, G. van den Brink, J.F. van Sonderen: The systematic undershoot of saccades: A localization or an oculomotor phenomenon? Proceedings of the Third European Conference on Eye Movements, Dourdan, France, September 1985 1987, Pages 85-94. https://doi.org/10.1016/B978-0-444-70113-8.50013-8

Johan De Bie, A.C. Arntzenius, F.H.Bonjer:CAI-ECG: Computer asisted instruction of ECG-analysis. Conference: Computers in Cardiology, Leuven Belgium, September 1987

Louise Hainline, Johan De Bie, Israel Abramov, Cheryl Camenzuli: Eye movement voting: A new technique for deriving spatial contrast sensitivity. Clinical Vision Sciences 2(1):33-44, January 1987

1986

Johan De Bie: The control properties of small eye movements. Thesis (doctoral)--Technische Universiteit Delft, 1986. Summary in Dutch. "Stellingen" ([1] leaf) inserted. Includes bibliographical references http://resolver.tudelft.nl/uuid:f9a482ee-83fa-498f-a87e-4c46b7faf881.

Israel Abramov, Cheryl Camenzuli, Elizabeth A Lemerise, Louise Hainline, Johan De Bie, Hebert Peck: Paraxial photorefraction and photokeratometry. Infant Behavior and Development 9:1-1, April 1986. DOI: 10.1016/S0163-6383(86)80001-7

Johan De Bie, G van den Brink: A model for the slow control system during monocular fixation. Vision Research 26(7):1129-42 February 1986. DOI: 10.1016/0042-6989(86)90047-7

1985

Johan de Bie: An afterimage vernier method for assessing the precision of eye movement monitors: Results for the scleral coil technique. Vision Research 25(9):1341-3 February 1985. DOI: 10.1016/0042-6989(85)90051-3

1984

Johan De Bie, G. van den Brink: Stimulus Movements are Necessary for the Study of Fixational Eye Movements. In book: Theoretical and Applied Aspects of Eye Movement Research, Selected/Edited Proceedings of The Second European Conference on Eye Movements December 1984. DOI: 10.1016/S0166-4115(08)61819-1

1983

Johan De Bie, G. van den Brink: A study of fixational eye movements using small stimulus movements. Perception 12(1):A29. December 1983

J.F. van Sonderen, Johan De Bie, G. van den Brink: The influence of stimulus shape on the fixation point. Perception 12(1):A37. January 1983

1982

Johan De Bie, G. van den Brink: The control function of both drift and saccades during fixation. Perception 11(1):A9. November 1982