Scientific and professional curriculum

of

Gabriele Cevenini

Current position

Full Professor of Bioengineering, Department of Medical Biotechnology, University of Siena

Qualification

Degree in Electronic Engineering Address of Bioengineering, February 26, 1986, University of Bologna

Professional register

Engineer Professional Association of Siena

Professional experience (positions held)

- Year 1986. Contractor for performance of intellectual work at the University of Siena, Interdisciplinary Research Center for Advanced Medical Systems (CRISMA), to carry out experimental and applied research in the Flow Cytometry and Histologic Image Processing and also to make studies on the development of Technical Computer Aided Design (CAD) for the design of devices for circulatory support.

- Year 1987. Research Collaborator at the Department of Electronics, Information and Systems Engineering, University of Bologna, under agreements between the Department and outside contractors.

- Year 1988. Internal Graduated at the Institute of Thoracic and Cardiovascular Surgery, Department of Bioengineering, Faculty of Medicine, University of Siena.

- School year 1988-89. Temporary Teacher of Electronics at the Professional State Institute for Industry and Handicrafts "G. Marconi", Siena; High School Exam member for Electronics and Electrical Engineering, at this Institute.

- From 23/10/1989 to 31/08/1991. Electrical engineer at the Technical Office USL 30, Siena, with management responsibilities, planning and maintenance of biomedical equipment and support activities for various clinical and scientific advice to the above USL.

- From 01/09/1991 to 30/09/1997. Clinical engineer at University Operative Unit of Clinical Engineering, Hospital of Siena.

- From 1/10/1997 to 30/09/2001. Researcher for the scientific field K06X (Bioengineering) at the University of Siena, Faculty of Medicine and Surgery.

- From 1/10/2001 to 31/10/2017, Associate Professor for the scientific sector ING-INF/06 at the University of Siena, Faculty of Medicine and Surgery. In 2014, he obtained the National Scientific Qualification as Full Professor of Bioengineering.

- From 2002 to 2014, Manager AOUS, Complex Operative Unit of Biomedical Engineering.

- From 2014 to 2019, Manager AOUS, Chief of the Complex Operative Unit of Health Technology Programming.

- From 2015 to 2018, Gabriele Cevenini was President of the Health Technology Assessment Commission of the Siena Hospital.

- Since 1989 he is member of the National Group of Bioengineering (GNB).

- From 1/11/2017 to date, Full Professor for the scientific sector ING-INF/06 at the University of Siena, Department of Biomedical Technologies.

Technical skills

Thorough knowledge and ability to use a variety of biomedical technologies, both software and hardware, at the specialist level of university teaching and advanced research in the following fields: radiology (diagnostic radiology imaging), dermatology (digital dermoscopy and multivariate statistical analysis of information); obstetrics and ginecology (ultrasound and computer tools applied to pattern recognition and identification of model parameters), cardiorespiratory (echocardiography and intensive care instrumentation, extracorporeal circulation, artificial ventilation, monitoring and analysis of cardiorespiratory signals), cancer (survival analysis and evaluation of the effectiveness of tumor markers), neurology (analysis of eye movements), ophthalmology (multivariate statistical models for research).

Computer skills, expert in planning and application of modern methods and computerized tools in biomedical environment, at the level of system and application programming. In particular, he is able to develop software for applied research using the following programming languages and meta-languages: C, MATLAB, SPSS.

He has design capacity of various types of models for basic and applied research for diagnosis and clinical decision making, specifically: dynamic physical-mathematical models, multivariate statistical methods and artificial neural networks.

Language skills

Italian, native. English, spoken and written.

Scientific activity (h-index= 29)

The scientific activity of Gabriele Cevenini is documented by about 350 scientific publications (more than 175 articles and 20 short reports in international journals, 22 international book chapters, 28 extended proceedings of international conferences, more than 40 abstracts of international congresses, 14 articles on national journals and more than 30 national conference proceedings, 8 patents).

Major research projects funded by the MIUR, CNR and Siena University. Sometimes the research studies were carried out in collaboration with foreign partners (from USA, Japan, Germany and Switzerland Universities).

Gabriele Cevenini is the author of 8 international patents about methods and systems for ultrasound estimation of fetal weight and for the hygenization of medical devices by UV-C light.

His research areas are: bioengineering of cardiocirculatory mechanics and artificial ventilation in respiratory mechanics; pattern recognition techniques in Pathology and Oncology; analysis of data and digital images, machine learning and telemedicine in Dermatology; neural networks in Obstetrics; model parameter identification and simulation in multivariate clinical decision support in post surgery ICU; multivariate statistical analysis and classification models in other various fields of Medicine; development of mechatronic processes and prototypes in the disinfection of healthcare objects and systems, through ultraviolet LED technology; biomedical instrumentation; healthcare technologies and Health Technology Assessment.

Teaching activity

Since the academic year 1989/90 Gabriele Cevenini has an intensive teaching activity at the University of Siena, in many Degree Courses (Health Professions, Nursing, Medicine, Dentistry, Engineering) and several post-graduate Courses. He was a teaching in the Special School of Biomedical Technology. It was also tutor of the course of Information Processing Systems, Degree in Telecommunications Engineering, Faculty of Engineering, University of Siena. Currently he is Professor of the course of Health Technology Management Systems at the Master Degree Course in Management Engineering, University of Siena.

Gabriele Cevenini was also advisor of several engineering, medical and healthcare theses and a member of the board of examinations of Graduate School of Engineering and Medicine, University of Siena.

The teaching topics are: Biomathematics, Biophysics, Medical Informatics, Medical Statistics, Bioengineering, Biomedical Instrumentation, Information Processing Systems, Computer Modelling of Cardiovascular and Respiratory system.

In the context of calls for numerous conferences and conventions, he held several invited lectures on topics: Cardiovascular Fluid Dynamics, Computer Science in support of medical diagnosis, Artificial Neural Networks and Expert Systems in Medicine, Statistical Methods in Medicine and Pattern Recognition, Devices and Analysis of Digital Images for diagnosis, Bioengineering of the Respiratory System.

Until 2010 and from 2017 to date, he is a member of the judging Committee of Professors for the Research Doctorate School of Medical Biotechnology, University of Siena.

From 2010 to 2017 he was a member of the judging Committee of Professors for the Research Doctorate School of Biomedical Engineering, University of Bologna.

Almost every year he participates as a member (sometimes as president) in various commissions for the examinations of admission to degree courses in medicine and the health professions.

Other scientific and educational activities

By a convention between the University of Siena and Siena Hospital, Gabriele Cevenini perform teaching activities, specialist support, technical and scientific assistance to many professional figures working in various hospital clinics (doctors, biologists, etc..), in the areas of applied medical statistics, biomedical engineering, applied computer science and bioengineering. Many topics and projects were studied and developed: the recognition of cutaneous melanoma by digital imaging dermoscopy devices and teledermatology, the estimated birth weight by prenatal ultrasound, the interpretation of important indices of malignant tumor, the estimation of reference interval of the analytes of biomedical laboratory, the quantitative study of eye movements for neurological applications, the implementation of models and procedures for monitoring the clinical risk of critically ill patients in intensive care, the optimization of blood use for the transfusion of critically ill patients, the management of biomedical instrumentation.