



RGI NEWS

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Associate Professor of Medical Electronics

The post of Associate Professor of Medical Electronics has been open for international applicants. Information about the post was announced in Finland in the two leading newspapers (Helsingin Sanomat and Aamulehti). Abroad the information was announced with about 100 telefax messages to colleagues, institutes and societies in the field of biomedical engineering. Information was also delivered through the electronic mail news system named "Electronic Information Resource in Biomedical Engineering" sponsored by The Whitaker Foundation, U.S.A. This media was especially very fast, wide, and effective in delivering information all around the world.

The deadline for the applications was the 7th of April, 1994. There has been wide interest in this post from Finland and from abroad and we have received altogether 17 official applications, which are:

- Dunajski, Zbigniew, Ph.D.
University of Twente, The Netherlands
- Eskola, Hannu, Dr.Tech
Tampere University Hospital, Tampere
- Hyttinen, Jari, Lic.Tech
TUT/RGI
- Kimmel, Eitan, D.Sc.
Technion, Haifa, Israel
- Lekkala, Jukka, Dr.Tech
State Technical Research Cntr, Tampere
- Meister, Ants, Ph.D.
Tallinn Technical University, Estonia
- Nousiainen, Juha, Dr.Tech
TUT/RGI
- Ping-Ya, Zhao, Ph.D.
McMaster Univ, Ontario, Canada
- Pommelin, Petri, Lic.Tech,
STAKES, Helsinki
- Reitmaa, Ilpo, Lic.Tech
TUT/Electronics
- Sievänen, Harri, Dr.Tech
UKK Institute, Tampere
- Struijk, Johannes, Ph.D.
University of Twente, The Netherlands
- Walker, Simon, Ph.D.
Imperial College, London
- Williams, Maini, Lic.Tech
Vaasa Technical College, Vaasa, Finland
- Xu, Zhenyao, Ph.D.
Hopital du Sacre-Coeur, Montreal, Canada
- Ylitalo, Juha, Dr.Tech
Oulu University, Oulu, Finland

Additionally, one official application was made by a Finnish person who wants to remain anonymous.

In addition to these 17 official applications, we have received five informal applications from China, Colombia, The Netherlands and USA only by telefax or electronic mail. These persons have not indicated that they had sent an official application in mail before the dead line even though they were encouraged to do so.

Jaakko Malmivuo



Research Projects at the Ragnar Granit Institute: 1. Magnetocardiography

This article starts a series of articles describing the research projects at our Institute. The first project to be introduced is magnetocardiography, and especially the diagnostic performance of MCG and ECG.

It is the purpose of this project to develop a magnetocardiographic recording method for large number clinical applications. We have found, that the ECG and MCG signals are not independent but the sensitivity distributions of these measurements are, if done correctly.

With the magnetic measurement method we obtain about the same amount of information from the electric activity of the heart as with the electric method. Therefore the diagnostic performance of the MCG is of about the same order as that of the ECG. Because the sensitivity distributions of these measurement methods are independent, the correctly diagnosed patient groups, though being about the same size, are not identical.

By combining the ECG and MCG to a new method called electromagnetocardiography, EMCG, the aforementioned patient groups may be combined and the number of incorrectly diagnosed patients may be decreased to one half. So large an increase in the diagnostic performance may be considered as a remarkable improvement in clinical medicine. Such a result has not been obtained by any other research group in biomagnetism.

Because the heart is located deep inside the thorax it is not practical to model with a higher order model than a magnetic dipole. As is very well known, the corresponding model is in use in clinical ECG as well.

We have come to the conclusion that the instrument to be developed for clinical MCG should be so cheap, that it would be competitive with other diagnostic methods in the sense of acquired increase of diagnostic performance. This result we can achieve with a device which does not need a magnetically shielded room and which has a simple technical design. Such a method and instrument we name "Large Number Application", due to simple installation and cheap price it can be installed in a large number of hospitals.

We also believe, that with the Large Number Application philosophy we can obtain more clinical information than with a "Large Scale Installation" device, because "Large Number Application" instruments can be used by larger number of research groups and with them a much larger number of patients can be diagnosed.

The clinical diagnostic performance of the MCG has been investigated by Dr. Tech Juha Nousiainen and MD Sakari Oja. The instrumentation is developed by Ph.D. Simon Walker and Lic. Tech Antti Rissanen. Also several other persons work on the project.

The principal investigator of the MCG- project is Prof. Jaakko Malmivuo.

Information Lecture on Biomedical Engineering Studies

The traditional Electrical Engineering Department's information lectures for the second year students on electrical engineering studies will be given on Thursday, 14.4. 1994, halls SA 201, 203 and 207. Ragnar Granit Institute gives information on Biomedical Engineering Studies at 14.15 - 15.15 o'clock, hall SA 207.



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