3.5.2022

Two early-stage researcher positions in machine learning, signal analytics, and measurement techniques in sleep medicine

Expected tasks	Requirements
- Developing and investigating novel computational methods -Clinical measurements and reporting of results -Writing scientific articles and the Ph.D. thesis -Possibility for teaching and supervision duties -Global scientific collaboration	- M.Sc in an applicable field, or will soon have a M.Sc. -Studies in medical physics/technology are beneficial -Fluency in written and spoken English -Programming skills are beneficial -The capability to work in a multi-disciplinary team and good collaboration skills

In the Ph.D. projects, it is possible to combine tasks from the following areas:
1) **Developing and testing medical devices and novel measurement techniques**
2) **Machine and deep learning-based data and signal analytics**
3) **Studying signal analytical biomarkers connecting sleep apnea and cardiovascular diseases**
4) **Measurements and working in SmartSleep Laboratory**

Description of the projects

The projects involve developing new technological, computational, and machine/deep learning-based solutions for diagnostics of sleep disorders, having a central focus on sleep apnea. During projects, the selected early-stage researchers will develop an in-depth understanding of measurements and analyses of physiological signals such as electroencephalogram, electrocardiogram, and photoplethysmogram. In these projects, the technical innovations (e.g., wearables) are combined with state-of-the-art computational and signal analytical methods aiming at real-world clinical utility, usability as well as patient safety and comfort. Projects are multidisciplinary in nature, intrinsically combining parts from medical physics, technology, health informatics, and clinical physiology and neurophysiology.

Working environment

The work will be carried out at Kuopio University Hospital and the possibility to utilize the research infrastructure at the Department of Applied Physics at the University of Eastern Finland can be negotiated later (see research group STAR, https://sites.uef.fi/star/). The Hospital District of North Savo will be the employer via competitive research funding. **The research will be a part of a larger global research consortium and research visits are possible in multiple different locations (e.g., in Australia, Spain, or Iceland)**. The research group conducts globally well-renowned research related to improving the diagnostics of sleep disorders. **This Ph.D. project is an excellent opportunity for those interested in a career as a medical physicist or aiming for an academic career.**

Alongside the Ph.D. project, it is possible to supervise B.Sc. and M.Sc. students and participate in teaching studies. We also actively collaborate with companies manufacturing and developing medical devices and health tec solutions and some parts of the Ph.D. project can be conducted in collaboration with these companies.

The positions are filled immediately when the right candidates are found. **We accept applications** (incl. CV, possible list of publications, study records if M.Sc. studies are still on-going) via e-mail to **samu.kainulainen(at)uef.fi** and **henri.korkalainen(at)kuh.fi.**

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