Doctoral Student Position at the University of Zurich, Switzerland

Computational Modeling & Experimental Investigation of Brain Fluid Dynamics for Non-Invasive Identification of Treatable Dementia

Start date:	as soon as possible, upon mutual agreement
Duration:	4 years
Funding:	Standard PhD student salary as set by the Swiss National Science Foundation
Requirements:	MSc degree or equivalent, top grades throughout studies
Application deadline:	February 1, 2019

Project description:
The differentiation between currently not treatable types of dementia, such as caused by **Alzheimer's** disease, and treatable types, e.g. due to **hydrocephalus**, is of high clinical importance. Despite advances in medical imaging, clear differential diagnosis requires invasive procedures for many patients. Since only specialized centers offer such tests, misdiagnoses occur and patients are wrongly labeled as terminally ill.

In a project funded by the **Swiss National Science Foundation**, we aim to study the physiologic basis of a new, non-invasive method for the identification of treatable forms of **dementia** caused by cerebrospinal fluid pathologies. The project combines computational modeling of fluid dynamics in the brain and spinal canal, physiologic tests on healthy human volunteers, and combined invasive and non-invasive measurements on patients.

We are seeking a doctoral student for the computational part of the project, which will include the design of a **computational physiologic model** of dynamic fluid distribution in the **central nervous system**, taking into account the interaction of the cerebrospinal fluid with the cardiovascular and respiratory systems. The student will also contribute to the physiologic tests on healthy volunteers. S/he will furthermore participate in the analysis of data acquired on patients, working in close collaboration with our partners at ETH Zurich and the University Hospital Bern.

We are particularly looking for candidates with strong background in **systems modeling**, preferably with experience in computational physiology, systems biology and fluid dynamics. Ideally, the candidates will also have a fundamental understanding of human physiology and anatomy. Excellent oral and written English language skills are mandatory. German language skills are not required, but of advantage.

Institution and research group:
The vision of **The Interface Group** is to answer fundamental questions of physiology and address clinical needs through the convergence of engineering, biological and medical research. We combine computational techniques with experimental methods to establish comprehensive models of investigated systems. Located at the **Institute of Physiology**, University of Zurich, we offer an intellectually and socially stimulating, diverse work environment, and excellent opportunities for career development.

Mode of application:
Please send your complete application electronically to **Prof. Vartan Kurtcuoglu**. We request a letter of motivation, your CV, three names of references with e-mail addresses, a list of publications (if any), plus transcripts of BSc and MSc grades or equivalent.

Prof. Dr. Vartan Kurtcuoglu
University of Zurich
Institute of Physiology
vartan.kurtcuoglu@uzh.ch