

## Training Differential Diagnosis in Medicine: a Virtual Reality Approach

Differential diagnosis is a major course in medical training. The training concept for differential diagnosis mainly consists in learning by heart various decision trees connecting symptoms and causes. However, it is well established that it is possible to identify causes of symptoms by various approaches rendering a diagnosis highly complex. Suitability of approaches in diagnosing symptoms may vary across patients and medical environment. Furthermore, different diagnosis approaches vary in costs and in duration of the diagnosis rendering the choice of the perfect diagnosis highly complex.

Skills in conducting a differential diagnosis therefore depend on the level of flexibility of the physicians, by means of which they adapt their strategy to the continuously updated information about the patient's health status. Virtual and Augmented Reality (VAR) may greatly contribute to achieve an acceptable level of diagnosis skills.

In a first step, we would like to implement a simple avatar patient in Augmented or Virtual Reality, simulating a variety of symptoms and interacting with the physician trainee. Diagnosis strategies will be scored considering the literature and experience accumulated by various experts in the matter. With the help of gamification, the implemented system shall achieve a high degree of motivation of the trainee, improving efficiency and effectiveness of the training.



„Developments in bioinformatics, molecular biosciences, and in medical imaging technologies revolutionize medicine” D-HEST.

<https://ethz.ch/de/studium/bachelor/studienangebot/systemorientierte-naturwissenschaften/medizin.html>

### Your tasks

- Collaborate in the design of a VAR training system for differential diagnosis in medicine
- Set-up a VAR environment enabling to perform differential diagnosis and including components of gamification
- Report achievements in a written report and in an oral presentation

### Requirements

- Motivated to work with virtual / augmented reality
- Extensive experience in object-oriented programming with .NET / C#
- Experience in developing software with Unity3D
- Familiar with AR and VR technology

### Support and contacts

We provide a broad interdisciplinary technical and scientific support and have a solid experience in the many disciplines required to run the project. For further information please contact:

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or call: 044 632 34 92 (Ch. Fässler) 044 632 39 81 (M. Menozzi). Earliest start date is September, 1<sup>st</sup>, 2019. No latest start date.