

## **Affective computing: deep learning in emotion recognition from physiological signals**

Emotions and intuition drive most of our decisions. Still, we know very little about what, when, and how do we experience our emotions. By increasing our knowledge, we can help people with emotional disorders. We can also adjust technologies better, so that they respect our affective states and filter information we do not want since they can evoke negative emotions. Analysis of affective states, including emotions from available data is the domain called **affective computing**.

Recently, we can observe the increasing market and availability of **wearables** of various type like smartwatches, wrist bands or smart rings. They possess multiple sensors monitoring biological functions of our organism like heart rate variability (HRV) or galvanic skin response (GSR). Based on physiological signals delivered by these sensors, we want to identify emotions specific for our physiology, which sometimes we even are not aware of.

In this project, we will build and test various architectures of deep neural networks. They should enable us to identify new emotions and process raw signals without their prior pre-processing and feature engineering.

Since most of the studies so far were performed in the laboratory environment, we want to analyze emotions experienced in everyday life. As a result, we will gather new datasets, develop tools and models, which can be further utilized by other researchers in their studies.

Additionally, we will investigate the relation between textual content and emotions it evokes. We will rely here on objective states of our organism (physiological signals) rather than subjective perception declared by people in self-assessment questionnaires.

The project will make use of multiple mobile and wearable technologies.