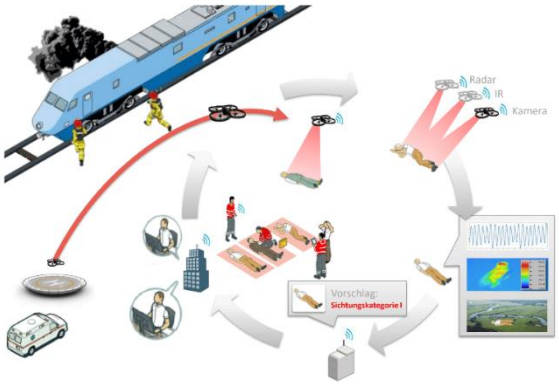
SEKTION MEDIZINTECHNIK

UNIKLINIK RWTH AACHEN
Klinik für Anästhesiologie

Limb-movement detection and level of injury classification in injured people using IRT imaging and AI

Introduction

In a mass casualty incident (MCI), such as a railway accident or far-reaching natural disaster, way more medical resources are often required than the ones immediately available on site. Before patients can be treated and transported away, they are divided into categories according to the severity of their injuries (triage). Due to a lack of routine, this may impose high stress and emotional strain for the emergency services.



In the FALKE project, a flight system equipped with visible and thermal imaging technology is used for a partially automated search and triage of injured people in the disaster area.

Aim of the work

Within the scope of the FALKE project, a software system is to be developed which, based on algorithms and models for body detection and segmentation, enables the differentiation of potential injured patients from light and moderated ones. In the present work, using infrared imaging, an algorithm will be developed to detect which limbs of the human body are moving, and, potentially, which level of injury the person is. For this purpose, RCNN models are used to highly accurately detect and segment human bodies from the background. An own AI model is possibly to be developed and trained.

Requirements

- Experience in digital image processing
- Experience in AI/ML/DL
- Programming experience (python is desirable)

It is still advantageous:

- Experience with common Python libraries (OpenCV, Pytorch/Keras)
- Basic knowledge of (multi-)camera systems (calibration, projection matrices)
- Informatics/Electronics – related field studies

What we offer

In the course of the work, skills can be acquired using state-of-the-art digital image processing methods in conjunction with the latest drone and camera technology. The offered project is very application-oriented, and the developed algorithms can already contribute to saving lives in the near future. Furthermore, the Medical Technology Section with its composition of physicians, engineers and natural scientists offers a professionally diverse working environment. This can be a master thesis project.