

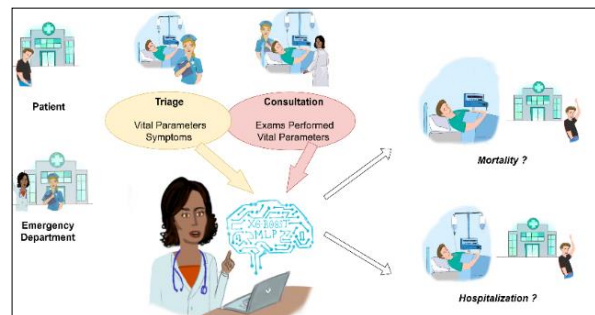
Master of Science – Biomedical Engineering  
Thesis Proposal

**AI-assisted ECG analysis for the Benefit of ED patients**

The Department of Biomedical Engineering (DBE) and the Emergency Department (ED) of the University Hospital of Basel are developing prediction models for emergency patients. As a next step, we aim to include electrocardiograms (ECG) in these models.

The MIMIC dataset is a large, freely available database of deidentified health data that has been widely used for research in areas such as predictive modelling of disease trajectories, analysis of treatment patterns, and development of decision-support systems.

This thesis aims to evaluate how ECGs can contribute to outcome prediction in ED patients. A literature search evaluates what algorithms have been used so far to implement ECGs in prediction models. Implementations of such algorithms will be evaluated on different outcomes of the MIMIC dataset. Multi-modal models might improve the predictive performance. Outcomes are defined in close collaboration with the clinical partners to ensure the clinical usefulness of the models.



**Nature of the Thesis**

Literature Review: 20%, Programming: 60%, Documentation: 20%

**Specific Requirements**

Good programming skills (Python) required.

**Group Leader / Supervisor**

Prof. Dr. Philippe Cattin, University of Basel, Center for medical Image Analysis and Navigation CIAN  
Dr. med. Annette Mettler, University of Basel, Center for medical Image Analysis and Navigation CIAN

**Collaborators**

Prof. Dr. Christian Nickel, University hospital of Basel, Emergency Department ED

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