



## Development of a predictive model for postoperative BMI and related diseases

Obesity and its related complications, such as Type 2 Diabetes Mellitus (T2DM), significantly impact patient health and healthcare systems worldwide. Bariatric surgery is a proven intervention for severe obesity, but patient outcomes can vary widely. Accurate prediction of postoperative BMI and related health conditions can guide personalized patient care and improve long-term health outcomes.

The objective of this master's thesis is to develop a sophisticated Deep Learning model that can forecast not only postoperative BMI trajectories but also the likelihood of developing conditions like T2DM based on these trajectories. This model will be trained using comprehensive tabular clinical data from multiple collaborating hospitals, including preoperative characteristics and postoperative outcomes, annotated by medical experts. The project aims to ensure that the model generalizes well across diverse clinical settings, providing a predictive tool that healthcare professionals can use to optimize patient management after bariatric surgery and to validate the model's predictive power against manually segmented data sets.

### Nature of the Thesis

Programming: 80%, Documentation: 20%

### Specific Requirements

- Experience in machine learning
- Good programming skills (especially Python)

### Supervisors

Vincent Ochs (PhD student), *University of Basel, Center for medical Image Analysis and Navigation (CIAN)*

Dr. med. Anas Taha, *University of Basel, Center for medical Image Analysis and Navigation (CIAN)*

Prof. Dr. Philippe Cattin, *University of Basel, Center for medical Image Analysis and Navigation (CIAN)*

### Contact

Vincent.ochs@unibas.ch

Anas.taha@unibas.ch

