Regensburg Pediatric Appendicitis Prediction

As part of the ML Zoomcamp by DataTalks, I worked on the Regensburg Pediatric Appendicitis dataset provided by the UC Irvine Machine Learning Repository.

This dataset holds the data from a cohort of pediatric patients with suspected appendicitis admitted with abdominal pain to Children's Hospital St. Hedwig in Regensburg, Germany, between 2016 and 2021. Each patient has (potentially multiple) ultrasound (US) images, aka views, tabular data comprising laboratory, physical examination, scoring results and ultrasonographic findings extracted manually by the experts, and three target variables, namely, diagnosis, management and severity.
This dataset was acquired in a retrospective study from a cohort of pediatric patients admitted with abdominal pain to Children's Hospital St. Hedwig in Regensburg, Germany. Multiple abdominal B-mode ultrasound images were acquired for most patients, with the number of views varying from 1 to 15. The images depict various regions of interest, such as the abdomen's right lower quadrant, appendix, intestines, lymph nodes and reproductive organs. Alongside multiple US images for each subject, the dataset includes information encompassing laboratory tests, physical examination results, clinical scores, such as Alvarado and pediatric appendicitis scores, and expert-produced ultrasonographic findings. Lastly, the subjects were labeled w.r.t. three target variables: diagnosis (appendicitis vs. no appendicitis), management (surgical vs. conservative) and severity (complicated vs. uncomplicated or no appendicitis). The study was approved by the Ethics Committee of the University of Regensburg (no. 18-1063-101, 18-1063_1-101 and 18-1063_2-101) and was performed following applicable guidelines and regulations.

In the original problem, there were three target variables: Managment, Diagnosis and Severity. Management was multinomial variable and Severity described the severity of the appendicitis. Diagnosis is picked as the target variable for this capstone project. We use various Machine Learning algorithms to predict whether a patient has appendicitis or not.