

# Design of an interactive user interface for the creation of accessible graphics (Bachelor Thesis)

ACCESS@KIT - Zentrum für digitale Barrierefreiheit und Assistive Technologien

The aim of this work is to improve the accessibility of graphics for visually impaired people. Until now, existing graphics have had to be reworked in order to make them available to blind people in a tactile way. The contents of graphics are reduced to the necessary and relevant elements and supplemented by simple Braille labels or also described by more detailed picture descriptions.

Despite the multitude of different drawing programmes and technical possibilities (vectorisation), sighted people still have difficulties in making graphics accessible because they have to understand contents and trace them manually. Apart from which elements are important.

To solve this problem, we used OCR and AI models to create a robust initial prediction for labelling graphics with lines, polygons and bounding boxes. The resulting metadata can be displayed on an interactive user interface, allowing sighted people to create accessible graphics more quickly and make minor changes as needed. The goal is to provide output in the form of an SVG file that can be accessed in a variety of ways, such as tactile displays, printed formats or audio descriptions, making the graphics more accessible to the visually impaired.

As part of a bachelor's thesis, not only will an interactive interface be developed, but the steps from the original graphic to the accessible version will also be evaluated at the beginning and after completion of the interface.

## Objective:

To develop an interactive user interface for labelling images with lines, polygons and bounding boxes to make graphics accessible. The results will be used to generate an SVG that can be used tactilely by blind users (embossed or on digital tactile displays).

## Requirements:

Students with knowledge of JavaScript (ReactJS) and a database management system (e.g. MySQL) can send an email to [omar.moured@kit.edu](mailto:omar.moured@kit.edu) or [thorsten.schwarz@kit.edu](mailto:thorsten.schwarz@kit.edu).