

## **Preface**

Artificial intelligence (AI) has promoted new sociotechnical capacities. The thesis projects investigate the impact of AI tools in two domains: medical research and the creative arts.

Our technical research project aimed to develop a deep-learning model for left ventricle (LV) image segmentation. To achieve this, we utilized U-net architecture and the Pytorch framework. Model performance was assessed using accuracy, the area under the curve, and F1 score, with results showing an average of 0.90 accuracy, 0.83 F1 score, and 0.96 area under the curve. We used both model-segmented and researcher-segmented images to calculate the LV area and volume. Compared to a previously developed segmentation model for human echocardiography, our model performed moderately well, with an F1 score of 0.83 compared to the human model's 0.92. The developed model can be used to quantify other metrics of heart function and may be applicable for researchers conducting image segmentation on mice echocardiograms.

The sociotechnical research project explores the response to AI algorithms' capabilities in generating art, focusing on text-to-image AI tools simplifying the art-making process to text input. Text-to-image AI tools have raised debates among artists, art venues, and developers, as they hold different views on questions of creativity, artistic legitimacy, commercial implications for artists, and intellectual property. The research aims to provide insights into the challenges and opportunities associated with AI-generated art.