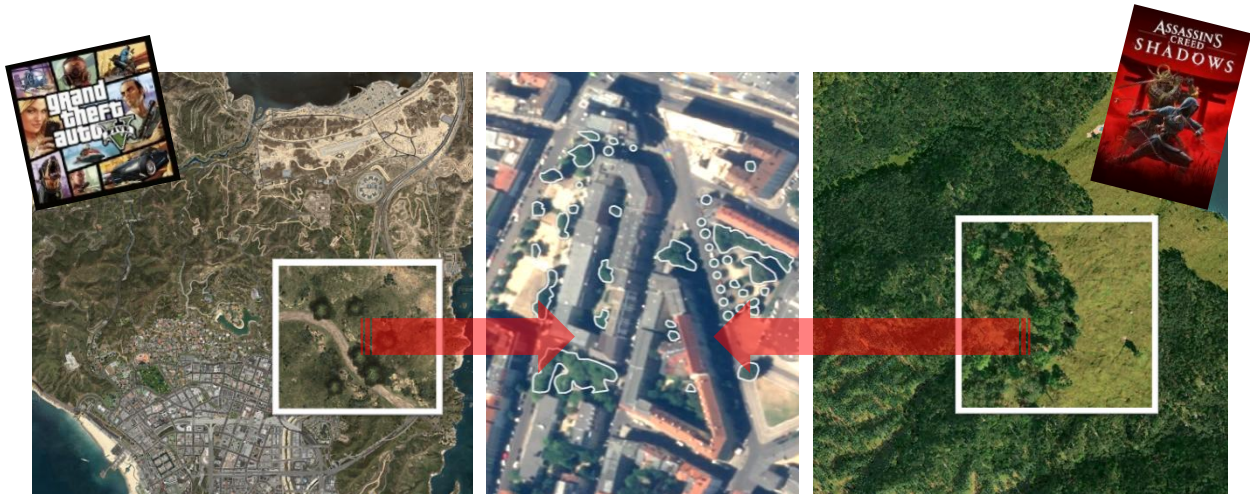# MASTER THESIS TOPIC

From Video Game Satellite-Like Maps to Real-World Tree Cover Segmentation: Using Synthetic Data for Improved Remote Sensing Applications

Background: Accurate tree segmentation is an important task in remote sensing analysing the forest cover in ecosystems. However, annotated training datasets for machine learning methods, especially those using deep learning techniques, are often costly and time-consuming to produce. An emerging solution is the utilization of synthetic or rendered imagery to pre-train models, thereby significantly reducing the reliance on extensive real-world datasets.

Objectives: This thesis aims to explore the potential of using satellite-like maps generated from video games as Grand Theft Auto V (GTA V) or Assassin's Creed Shadows as a source of synthetic imagery to pre-train self-supervised learning models. The pre-trained models will then be fine-tuned using high-resolution real-world satellite data (e.g., Planet Labs imagery) for the task of tree cover segmentation.

Prerequisites: Knowledge of remote sensing and GIS, basic understanding of forest inventory, introductory Python programming skills or willingness to self-study Python, and familiarity with image analysis or an interest in learning machine learning techniques.

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