A GAN-based Blind Inpainting Method for Masonry Wall Images

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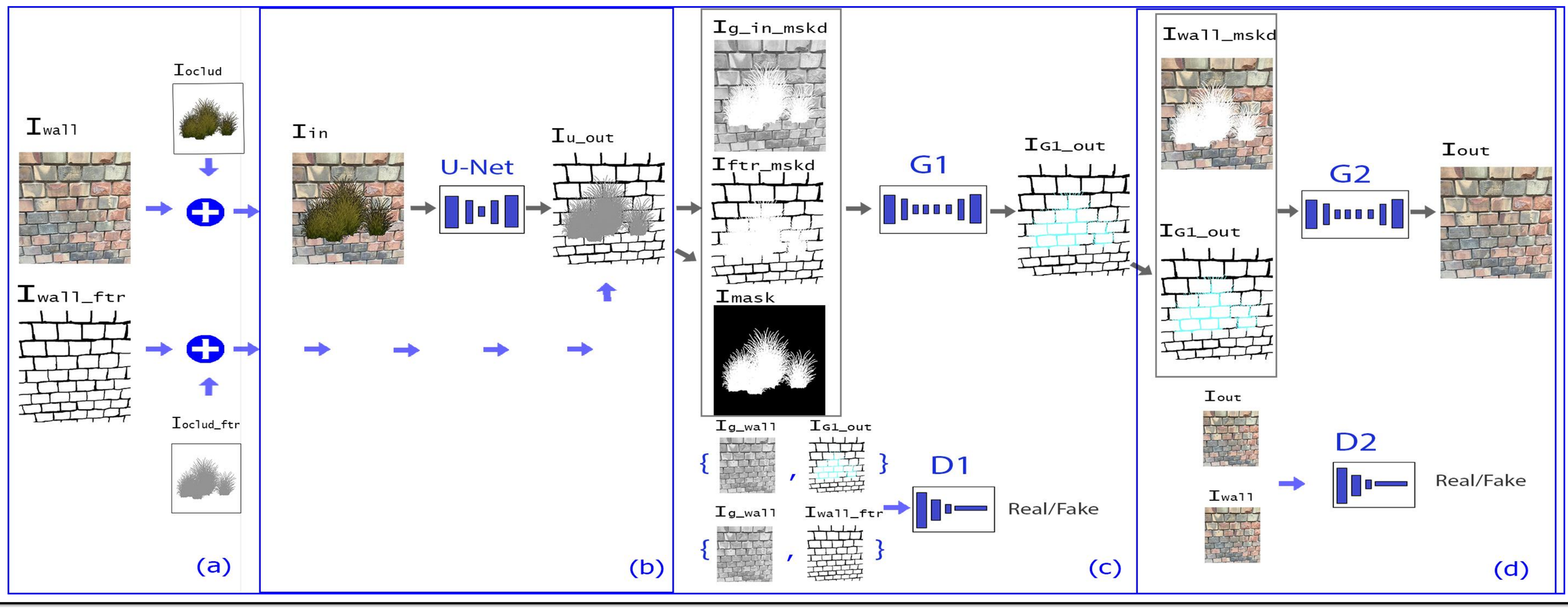
Overview

We introduce a novel end-to-end blind inpainting algorithm for masonry wall images, performing the automatic detection and virtual completion of occluded or damaged wall regions. For training and testing the network a new dataset has been created, and an extensive qualitative and quantitative evaluation versus the state-of-the-art is given.

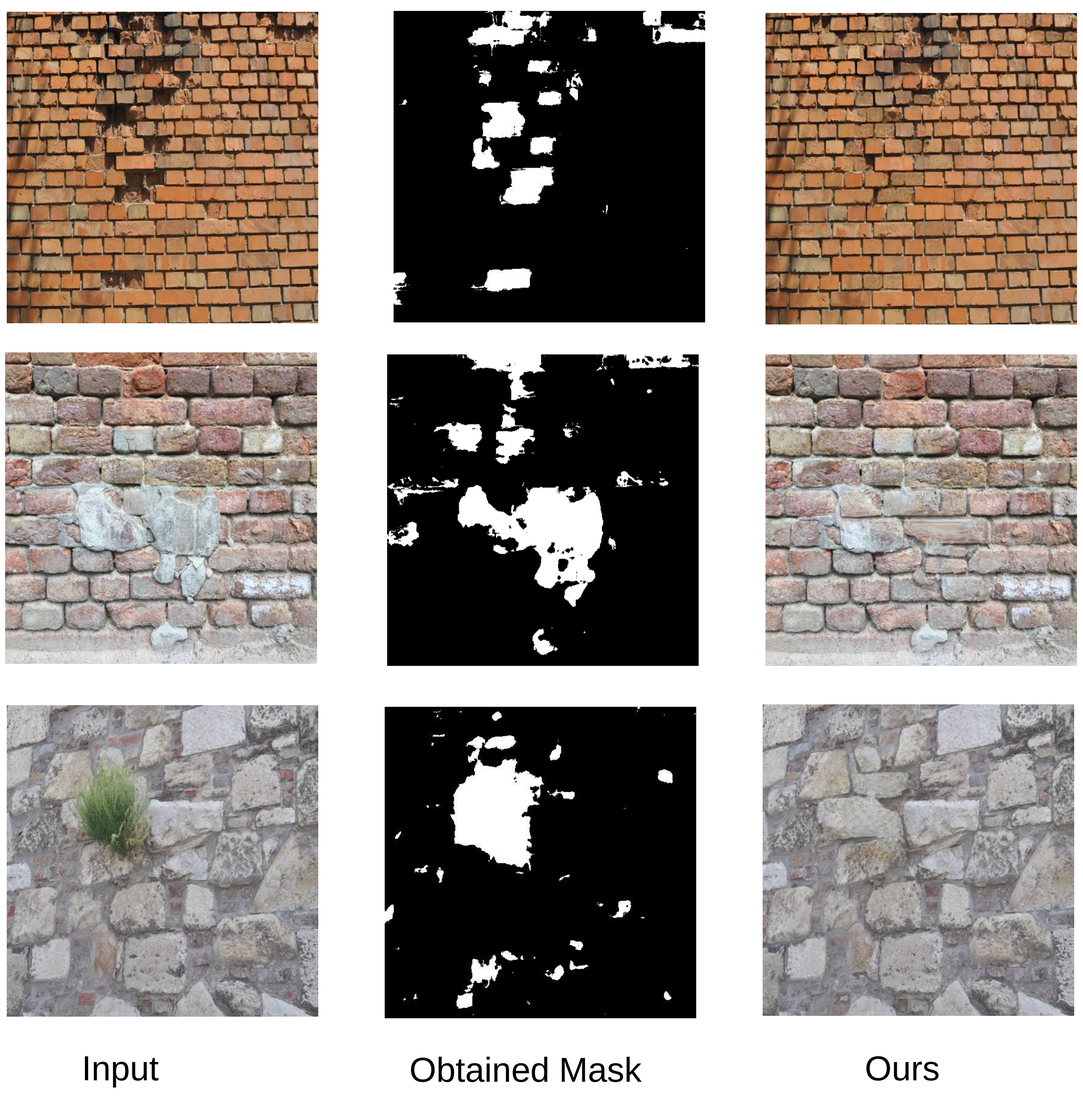
PROPOSED APPROACH

We propose a three-stage deep neural network that comprises:
A **U-Net-based** sub-network for wall segmentation into brick, mortar and occluded regions, which is followed by a two-stage adversarial inpainting model. The first adversarial network predicts the schematic **mortar-brick pattern** of the occluded areas based on the observed wall structure. Finally, the second adversarial network predicts **the RGB pixel values** yielding a realistic visual experience for the observer.

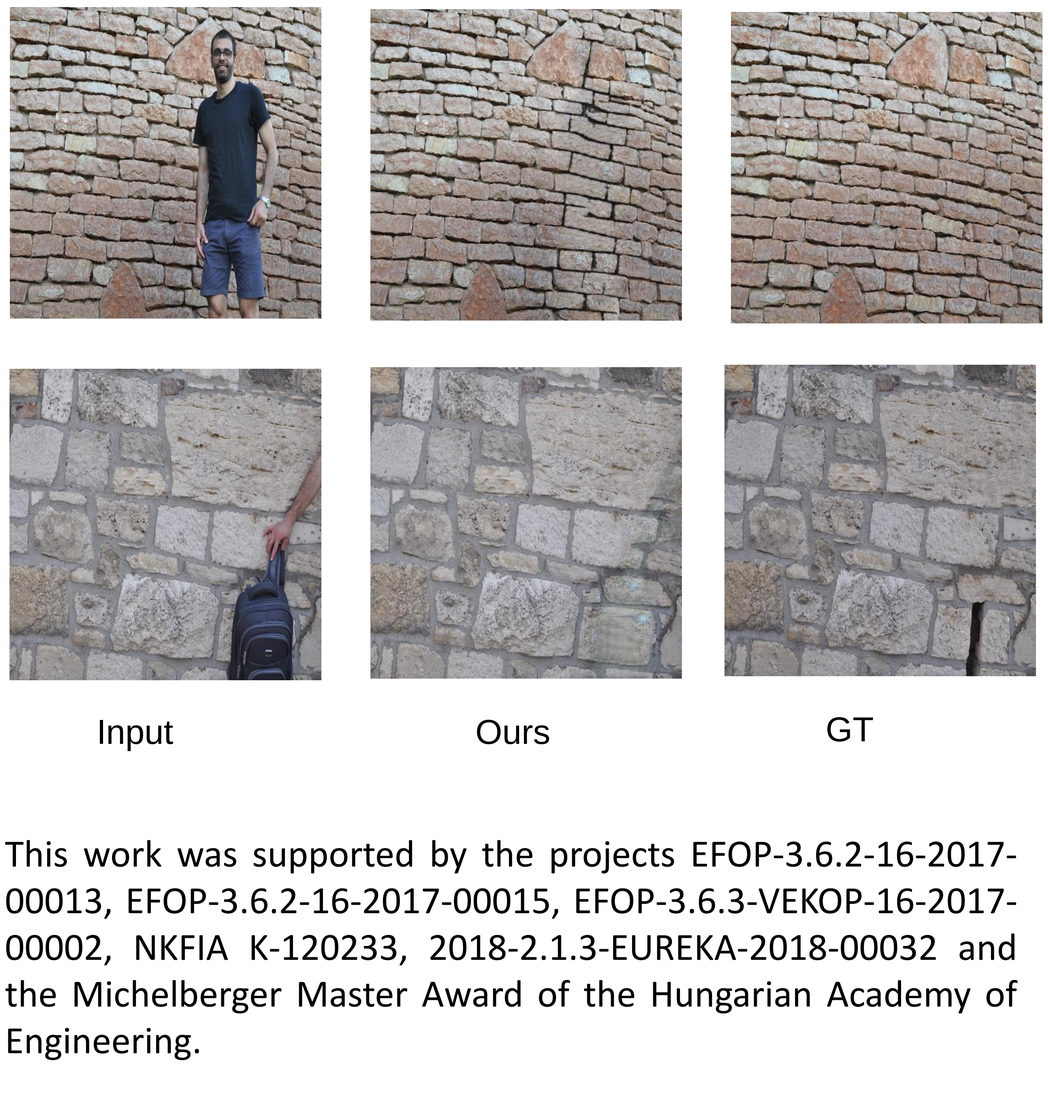
Workflow of the proposed approach



Results:



Results with Ground truth:



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