



Solar Proposals Automation

Overview

Red Buffer has developed a system that leverages computer vision and deep learning to automate the creation of financeable proposals for residential solar installations. The system analyzes satellite imagery of residential rooftops, constructs 3D models of the rooftops and the trees and other obstacles around the rooftop, and uses energy usage information to create a solar installation design in an automated manner.

Problem Statement

Building financeable proposals for residential solar installations is a very time-consuming and costly task. These proposals require an accurate mapping of rooftops, obstacles, and shade patterns to estimate the size of the solar system to be installed based on consumption. In addition, it also needs to determine the correct physical placement of panels and simulate the annual output of the system to determine the financial viability of the installation for the homeowner. Solar installation companies only finance an installation if all of the above are performed, which makes building a proposal costly and time-consuming.

CUSTOMER

Country: USA

Industry: Private Sector

Customer Size: 500 - 1000

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Technical Solution

The system developed by Red Buffer leverages computer vision and deep learning to substantially speed up the process of creating these proposals without requiring the use of costly third-party software. The system analyzes satellite imagery of residential rooftops, constructs 3D models of the rooftops and the trees and other obstacles around the rooftop using CycleGANs trained on a dataset of labeled satellite images that were augmented from a baseline of about 20,000 labeled rooftop images. The output of these models, together with energy usage information, can be used for creating a solar installation design in an automated manner. With this system in place, customized proposals can be built at a fraction of the cost. The system also opens the door for building proposals at a massive scale that would not be possible with a system requiring human intervention and effort.

Technologies	Domain
Deep Learning, CycleGANs, SKImage	Deep learning

Results

The system developed by Red Buffer has the potential to substantially reduce the cost and time required to create financeable proposals for residential solar installations. The system is able to analyze satellite imagery of residential rooftops, construct 3D models of the rooftops and the trees and other obstacles around the rooftop, and use energy usage information to create a solar installation design in an automated manner. This allows customized proposals to be built at a fraction of the cost, and opens the door for building proposals at a massive scale. The same models can be used for the purpose of estimating costs of roof replacement for the roofing industry and identifying homes most susceptible to tree damage for the purpose of selling insurance to these households. Overall, this system has the potential to revolutionize the solar installation industry and provide homeowners with more cost-effective and efficient solar installation options.