

Generative models for visualising abstract social processes: Guiding streetview image synthesis of StyleGAN2 with indices of deprivation

Abstract

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Introduction

Streetview images have predictive power. Could they be used to understand the visual quality of abstract social processes?

Why GANs? Have been around for a while but still SOTA for photorealistic image generation

What is special about non-conditional GANs:

- Unsupervised feature engineer, with qualities such as being continuous and reversible
- Interpretable features
- Correlations can be visualised in interesting ways

Literature review

Some experiments with GANs.

- Google's "visual concepts"
- Tufte's explanation of visual change

Methods

Data

- Streetview images and how they were selected
- IMD

Methods

- InterfaceGAN, guided forms of interpolation

Results

Projection into latent space

- 3 forms of projection, their limitation

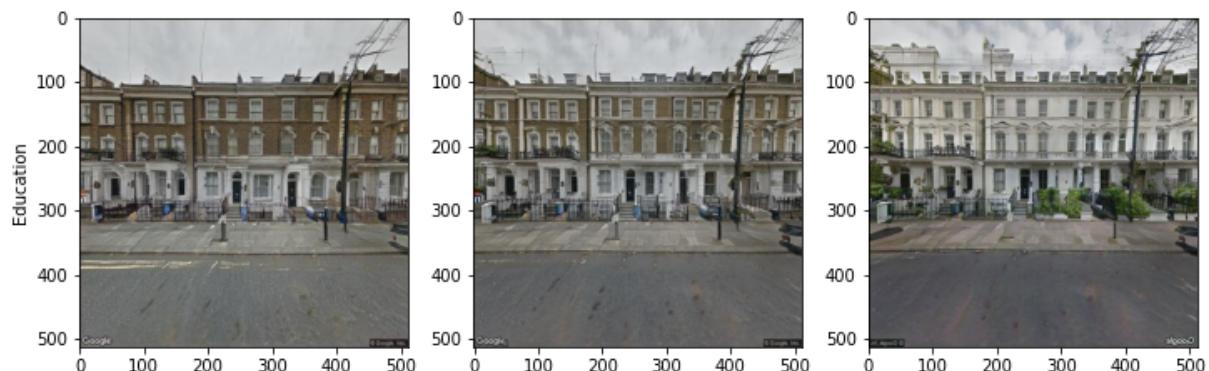
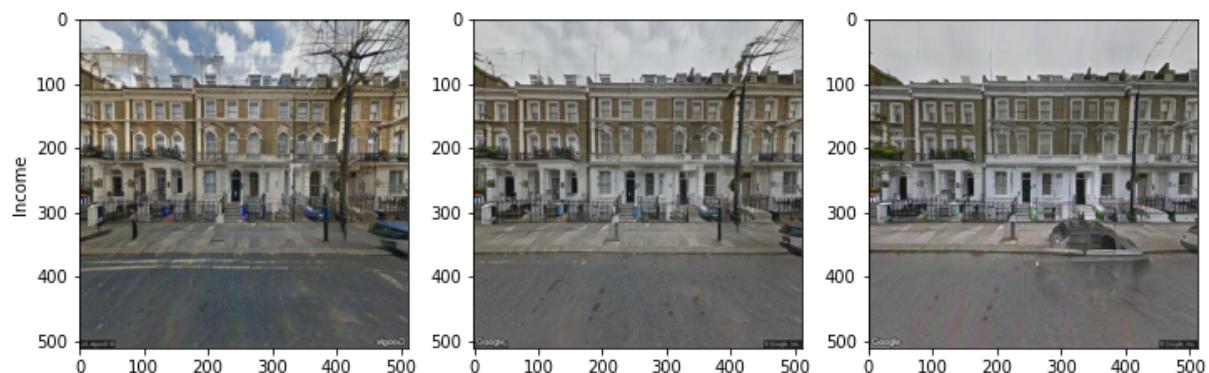
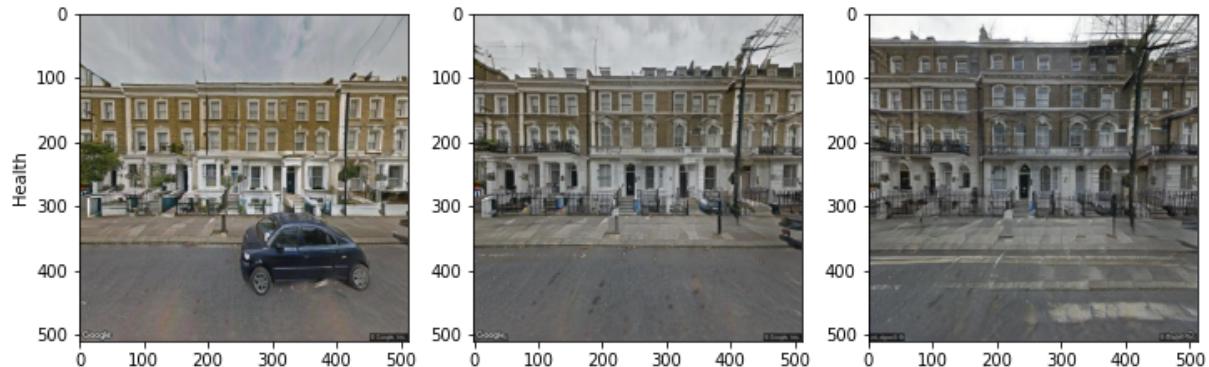


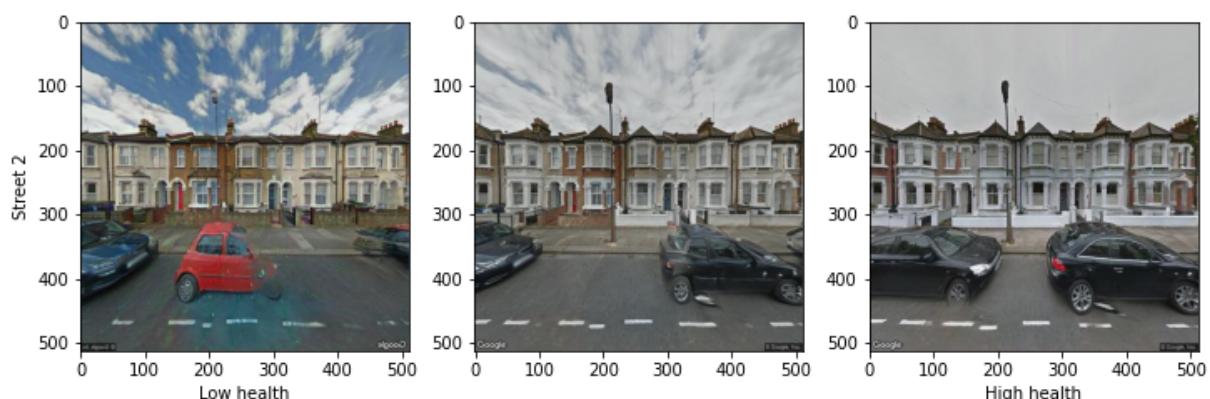
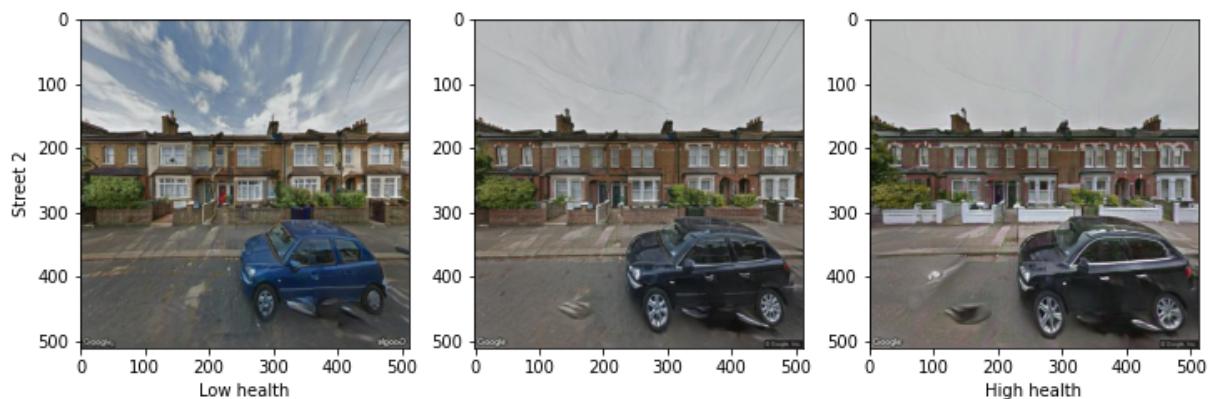
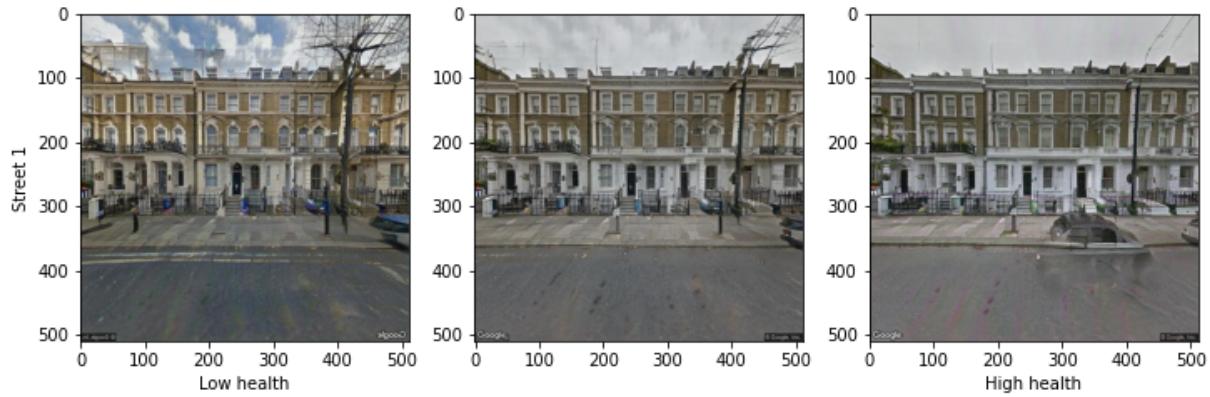
Guided interpolation

- Evaluating predictive potential

Variable	Projection model	Precision	Recall	F1 score
Income_london_rank	E4E	0.794	0.721	0.756
Education	E4E	0.769	0.781	0.775
Health	E4E	0.899	0.754	0.820
Income	Restyle	0.788	0.772	0.780
Education	Restyle	0.773	0.763	0.768
Health	Restyle	0.836	0.788	0.811
Income	SG2-ADA	0.716	0.738	0.727
Education	SG2-ADA	0.735	0.700	0.717
Health	SG2-ADA	0.747	0.738	0.742

Visualising latent walks





Conclusions

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