

10 minutes

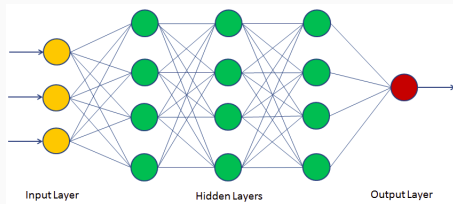
4 slides

X images

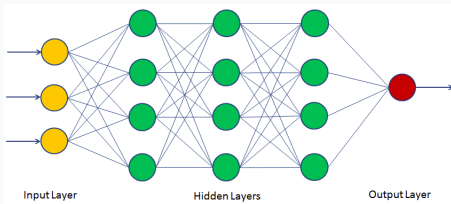
Frederik Hvilshøj — Data-Intensive Systems Group
Computer Science *and* Electrical and Computer Engineering



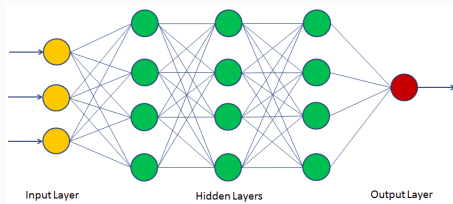
What is an Explanation?



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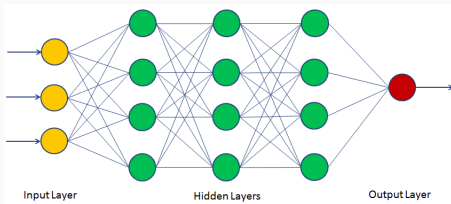
What is an Explanation?



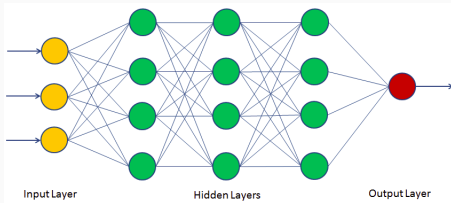
smiling



What is an Explanation?



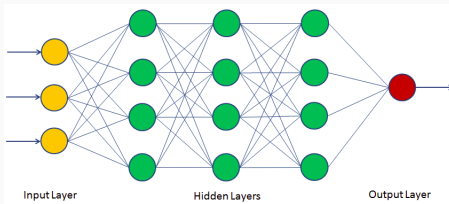
What is an Explanation?



not smiling



What is an Explanation?

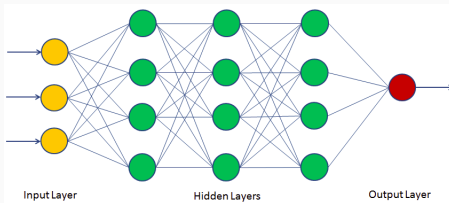


not smiling

How do we change the prediction?

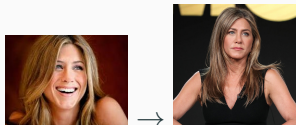


What is an Explanation?

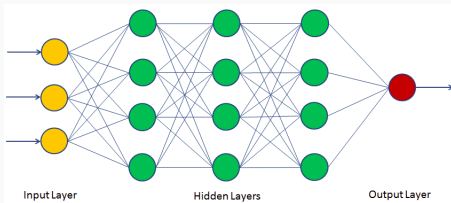


not smiling

How do we change the prediction?

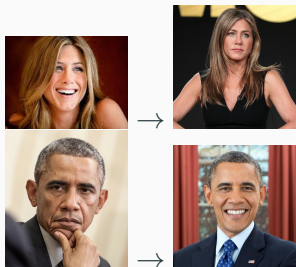


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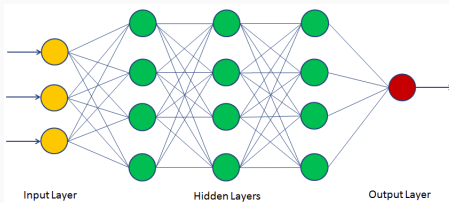


not smiling

How do we change the prediction?

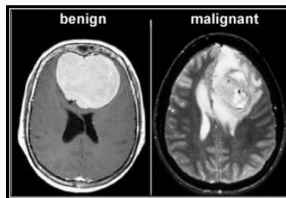


What is an Explanation?

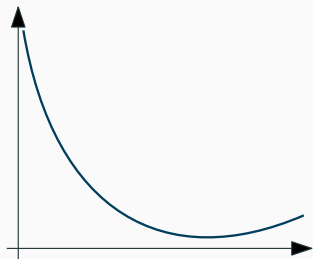


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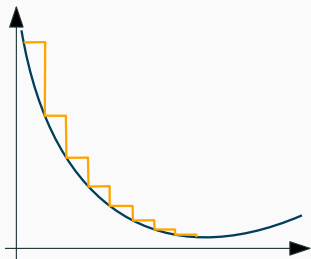
How do we change the prediction?



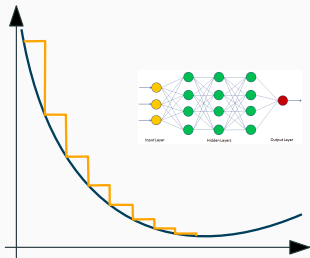
How to do it?



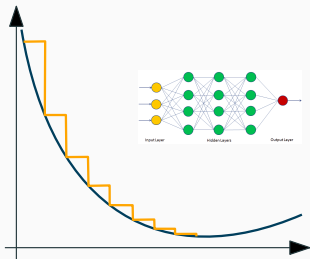
How to do it?



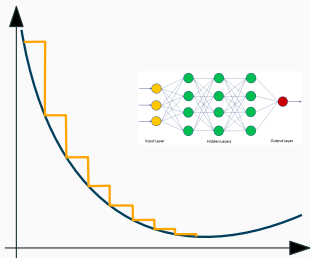
How to do it?



How to do it?



How to do it?



Interpretable counterfactual explanations guided by prototypes

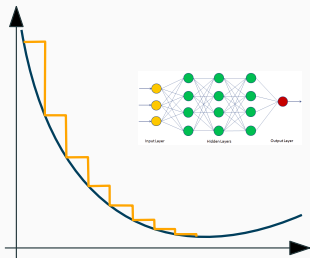
[A. Van Looveren, J. Klaise](#) - arXiv preprint arXiv:1907.02584, 2019 - [arxiv.org](#)

We propose a fast, model agnostic method for finding interpretable counterfactual explanations of classifier predictions by using class prototypes. We show that class prototypes, obtained using either an encoder or through class specific kd trees, significantly speed up the search for counterfactual instances and result in more interpretable explanations. We introduce two novel metrics to quantitatively evaluate local interpretability at the instance level. We use these metrics to illustrate the effectiveness of our method on an ...

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How to do it?

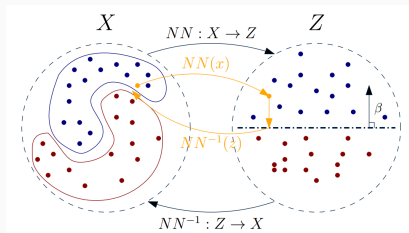


Interpretable counterfactual explanations guided by prototypes

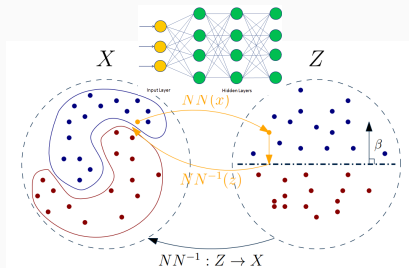
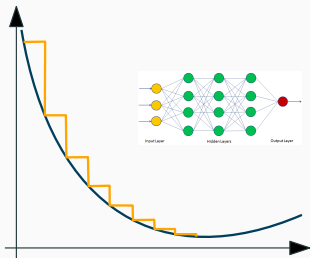
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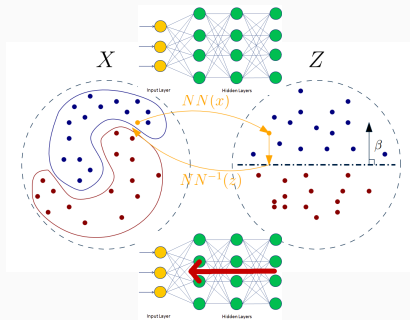
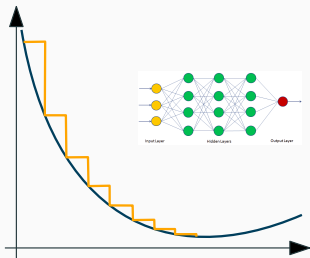
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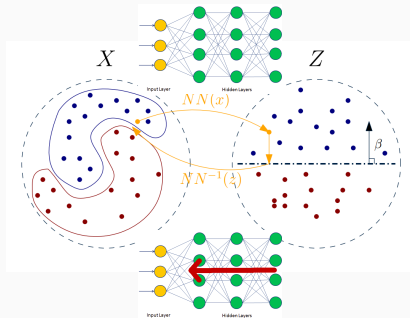
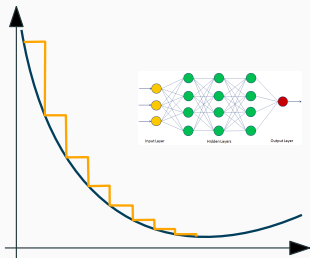
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Why should this work?



Nice: **Non-linear independent components estimation**

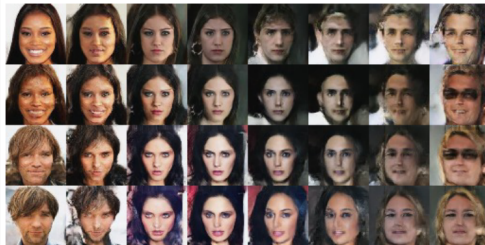
[L Dinh](#), [D Krueger](#), [Y Bengio](#) - arXiv preprint arXiv:1410.8516, 2014 - [arxiv.org](#)

... **independent** dimensions), then we obtain the following **non-linear independent components** estimation (NICE ... Directed graphical models lack the conditional **independence** structure that ... is used more successfully in nonlinear **independent components analysis** (Hyvärinen and ...

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Why should this work?



Density estimation using real nvp

[L. Dinh](#), [J. Sohl-Dickstein](#), [S. Bengio](#) - arXiv preprint arXiv:1605.08803, 2016 - [arxiv.org](#)

Unsupervised learning of probabilistic models is a central yet challenging problem in machine learning. Specifically, designing models with tractable learning, sampling, inference and evaluation is crucial in solving this task. We extend the space of such models ...

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Why should this work?



Glow: Generative flow with invertible 1x1 convolutions

[DP Kingma](#), [P Dhariwal](#) - arXiv preprint [arXiv:1807.03039](#), 2018 - [arxiv.org](#)

Flow-based **generative** models (Dinh et al., 2014) are conceptually attractive due to tractability of the exact log-likelihood, tractability of exact latent-variable inference, and parallelizability of both training and synthesis. In this paper we propose **Glow**, a simple type ...

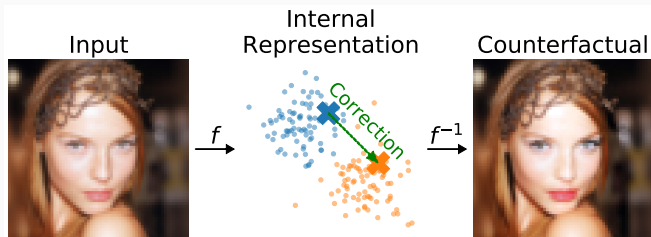
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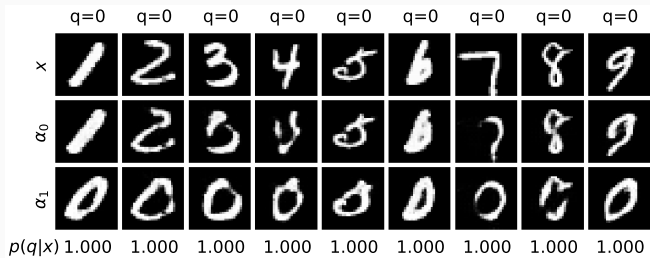
So does it work?



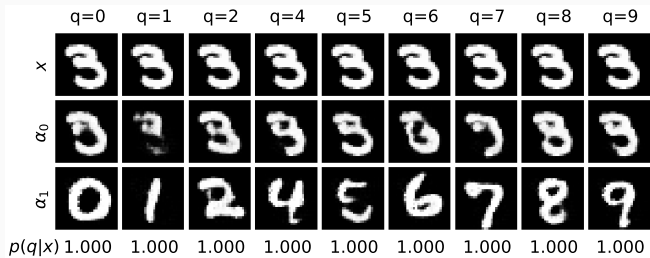
So does it work?



So does it work?



So does it work?



So does it work?

