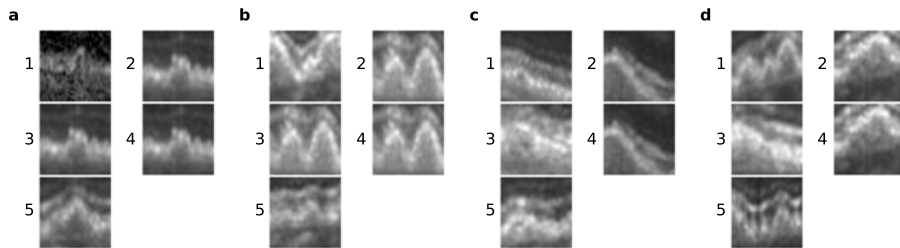# This actually looks like that: Proto-BagNets for local and global interpretability-by-design

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Supplementary material

Fig. 1. Examples of some learned prototypes without adding the dissimilarity loss to prevent the model from learning redundant prototypes. **(a,b)** Prototypes 2,3, and 4 are duplicated. **(c,d)** Prototypes 2 and 4 are duplicated.
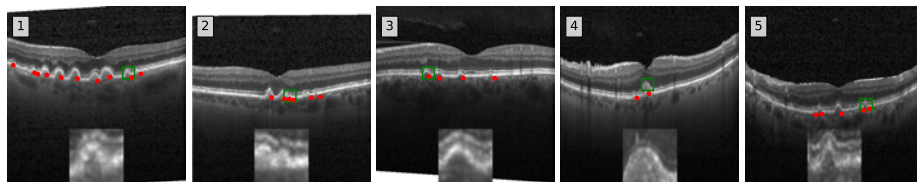
Fig. 2. Annotated training images from which the disease prototypes were extracted. The green boxes indicate the region where the learned prototypes were extracted, which are enlarged at the bottom. The red markers denote the reference annotations of drusen lesions. The number at the top indicates the prototype ID. For prototype 4, the bounding box is slightly above the lesion, probably due to a mistake when clicking on the lesion.
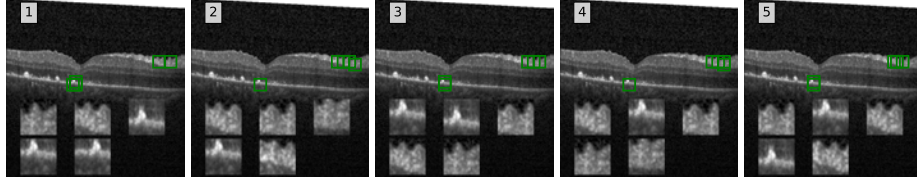
Fig. 3. Example of suspicious regions highlighted by Proto-BagNet on a disease image where the ophthalmologist did not find drusen lesions. The region highlighted near the Retinal Pigment Epithelium are sub-retinal deposits which are not typical drusen lesions but wringing of the ganglion cell layer.
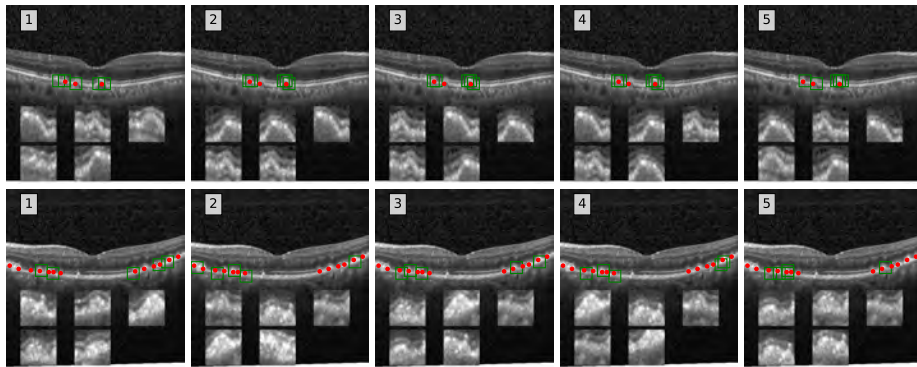
Fig. 4. Two examples of suspicious lesions extracted from each prototype similarity map on disease images. Drusen (annotated with red markers) are detected with high precision.

Table 1. Classification performance with confidence intervals (CIs) for drusen detection on validation and test sets. CIs are derived from bootstrapping with n=1000.

	Validation set				Test set			
	Accuracy	AUC	Recall	Precision	Accuracy	AUC	Recall	Precision
ResNet-50	$.99 \pm 1e\text{-}4$	$.99 \pm 1e\text{-}4$	$.98 \pm 2e\text{-}4$	$.99 \pm 2e\text{-}4$	$.99 \pm 1e\text{-}4$	$.99 \pm 1e\text{-}4$	$.98 \pm 2e\text{-}4$	$.99 \pm 2e\text{-}4$
dense BagNet	$.99 \pm 1e\text{-}4$	$.99 \pm 1e\text{-}4$	$.98 \pm 2e\text{-}4$	$.98 \pm 2e\text{-}4$	$.99 \pm 1e\text{-}4$	$.99 \pm 1e\text{-}4$	$.98 \pm 2e\text{-}4$	$.98 \pm 2e\text{-}4$
ProtoPNet	$.99 \pm 1e\text{-}4$	$.99 \pm 1e\text{-}4$	$.98 \pm 2e\text{-}4$	$.97 \pm 2e\text{-}4$	$.99 \pm 1e\text{-}4$	$.99 \pm 1e\text{-}4$	$.98 \pm 1e\text{-}4$	$.97 \pm 1e\text{-}4$
Proto-BagNet	$.98 \pm 1e\text{-}4$	$.99 \pm 1e\text{-}4$	$.94 \pm 3e\text{-}4$	$.98 \pm 2e\text{-}4$	$.98 \pm 1e\text{-}4$	$.99 \pm 1e\text{-}4$	$094 \pm 3e\text{-}4$	$.98 \pm 2e\text{-}4$