

Network Analysis for Explanation

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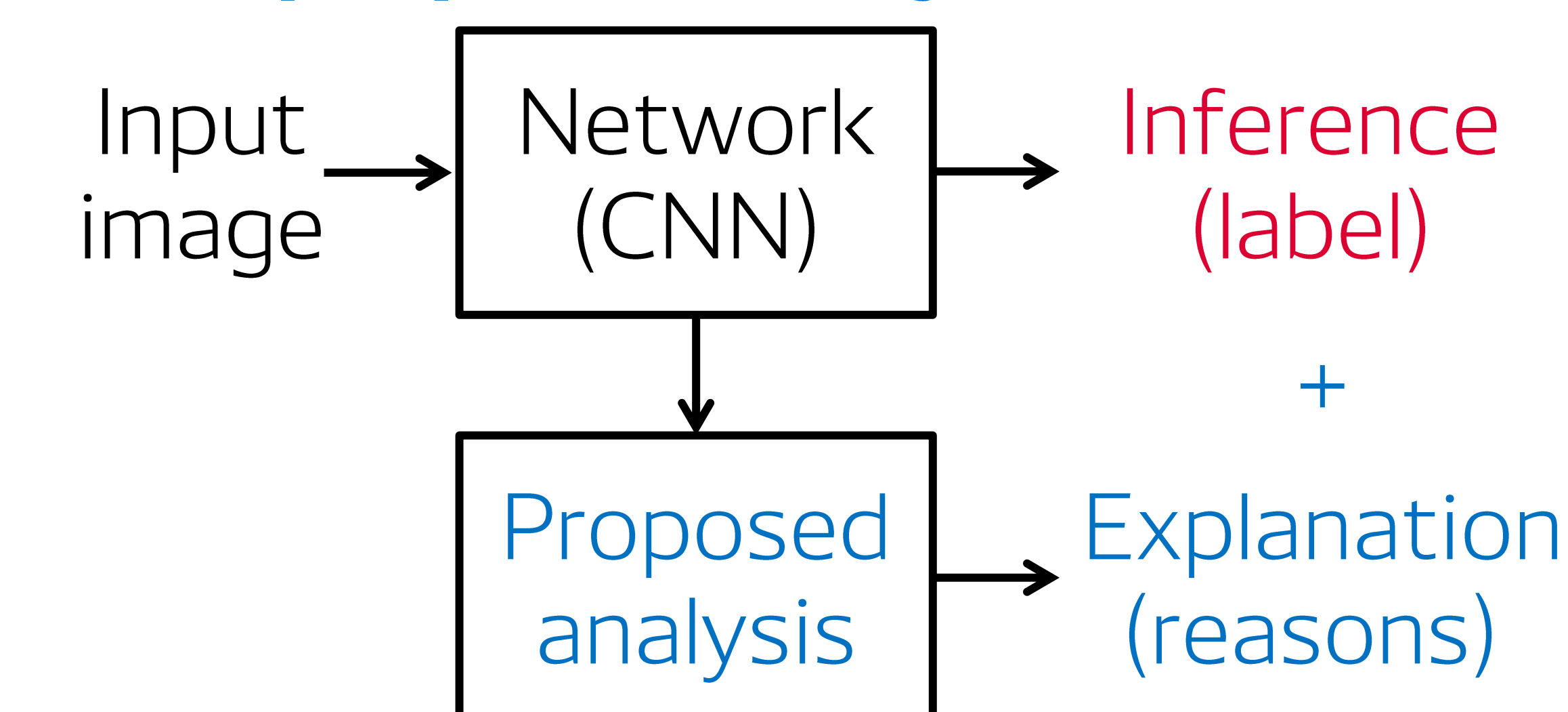
Abstract

We analyzed a trained network to extract features which mainly contribute the inference. Based on the analysis, we developed a simple solution to generate explanations of the inference processes.

Network inference only



Network inference with proposed analysis



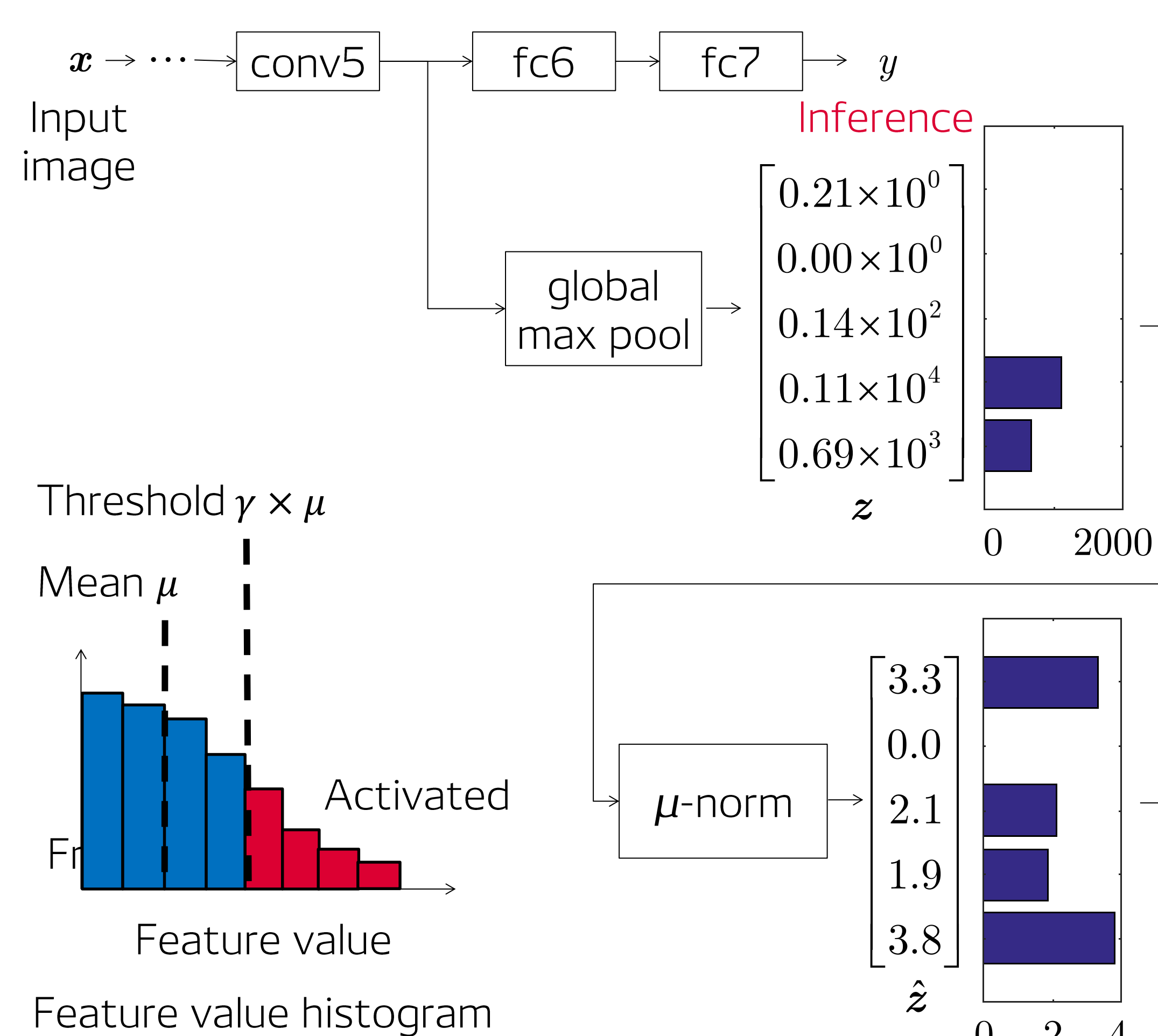
Results

*At most top three reasons are shown.

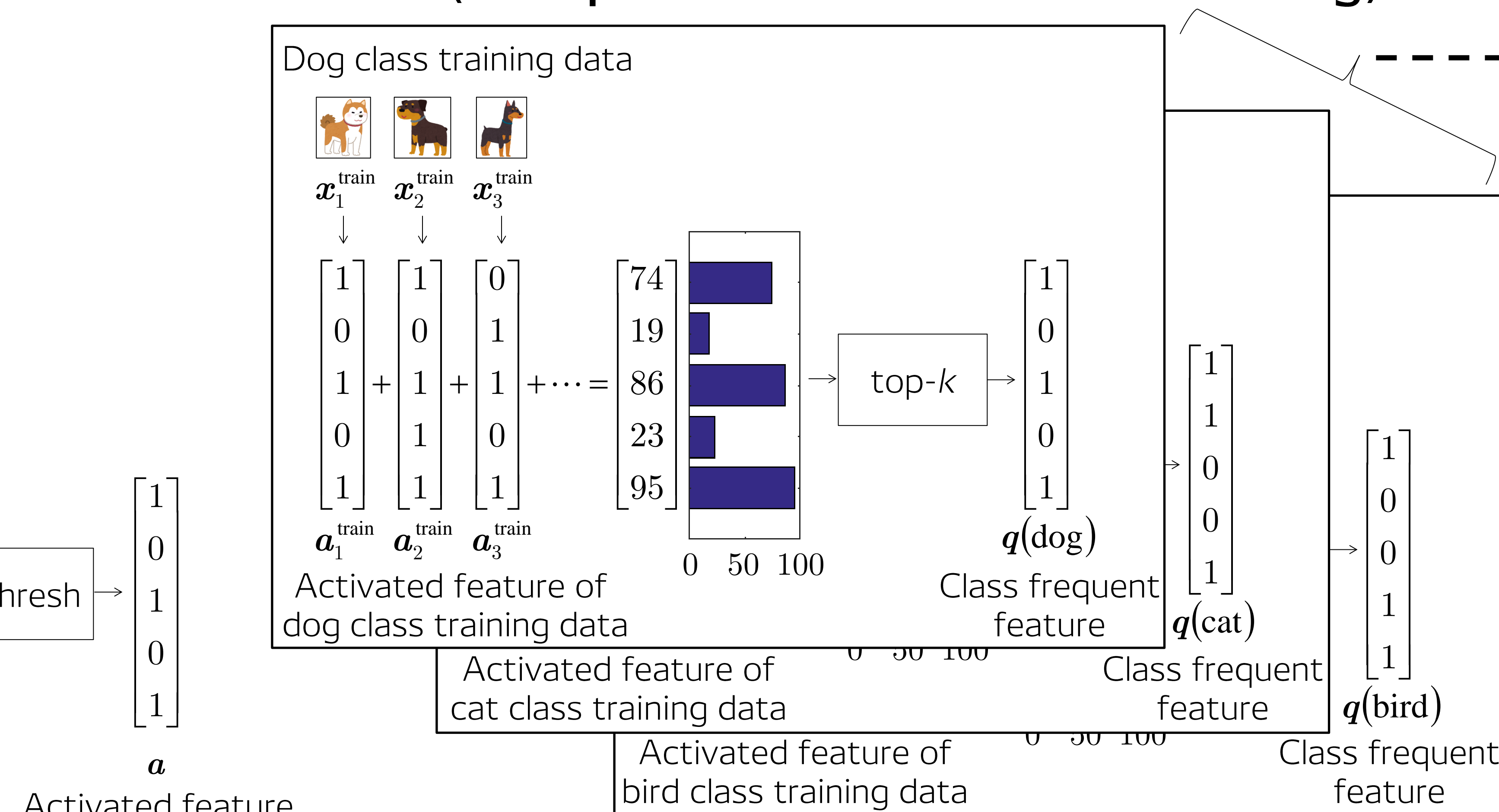
Image	Explanation
	This is bannister (obstruction), because 1) it has fine lattice patterns, thin rods, fine horizontal / vertical lines or rectangle lattice patterns; 2) it has fine lines; 3) it has square or square windows.
	This is ambulance (motor vehicle), because 1) it has rubber tires or heads of birds; 2) it has accumulated fine boxes/circles, large characters or two-tone red/white; 3) it has faces of black dogs or black square windows.
	This is tabby (feline), because 1) it has leopard patterns, faces of small animals, furs or two-tone brown/white; 2) it has animals, furs or two-tone black/brown; 3) it has furs or two-tone black/gray.
	This is thunder snake (snake), because 1) it has squiggle; 2) it has squiggle or standing ears of dogs and cats.
	This is drake (aquatic bird), because 1) it has accumulated fine boxes/circles, green or blue; 2) It has rounded or green; 3) It has colorful colors or blue.
	This is cassette player (electronic equipment), because 1) it has rounded; 2) it has accumulated fine boxes/circles or rubber tires; 3) it has rubber tires or square windows.
	This is cassette player (electronic equipment), because 1) it has rubber tires or rounded; 2) it has faces of small animals or fine square patterns; 3) it has rounded.
	This is Granny Smith (natural object), because 1) it has rounded or green; 2) it has rounded or green.
	This is carousel (mechanism), because 1) it has accumulated fine boxes / circles or green; 2) it has fine spots or foods; 3) it has fine lines.
	This is Granny Smith (natural object), because 1) it has rounded or green; 2) it has rounded or green; 3) it has rounded, fruits or yellow.

Explaining Inference Process

Activated Feature



Class Frequent Feature (computed at the end of training)



Inference Explainable Feature (computed at testing time)

