

# Biological Vision and Applications

## Module 03-10: Feature Learning

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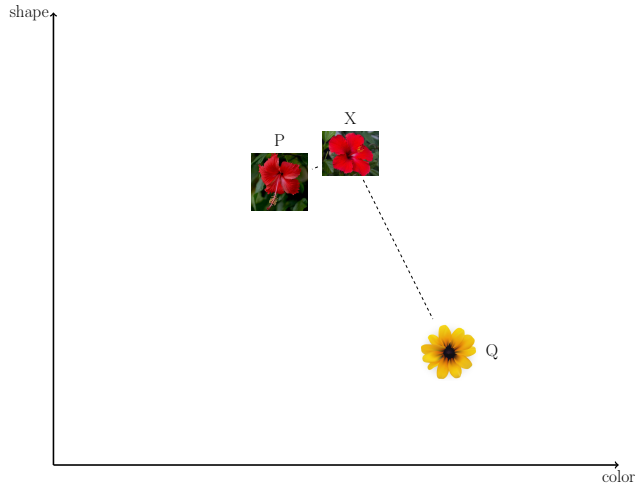


# Which feature do you choose?



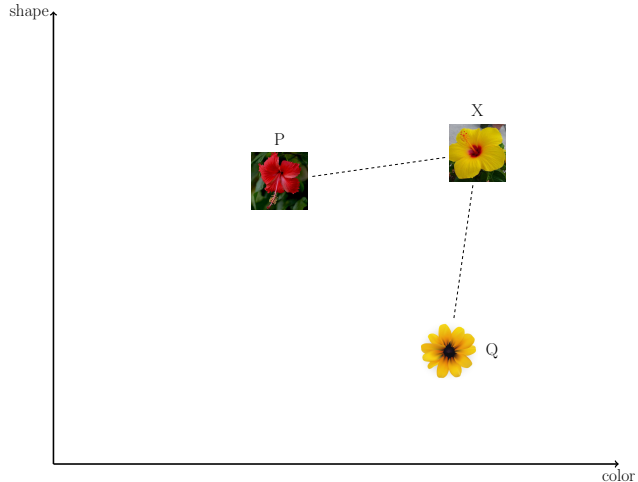
# Which category X belongs to?

P and Q are rare classes

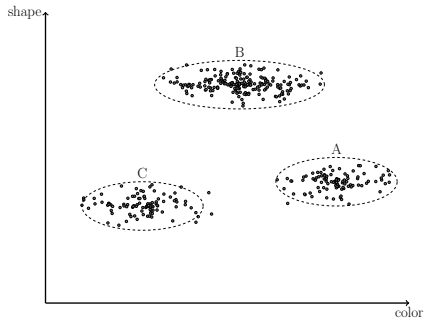


# Which category X belongs to?

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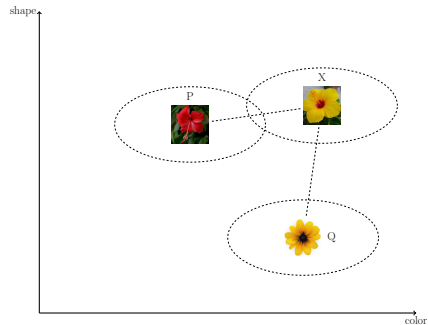


# Meta-learning from abundant classes



- Meta-learn that the objects features have more spread in color than shape
- Use more weight for shape than color


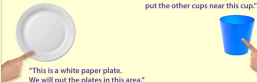


# Create models for rare classes from meta-model



- This is called Transfer Learning

# Shape bias

That is exactly how a child learns to distinguish objects

 <p>In this example, we have a variety of cups, spoons, and plates that vary in color, material, size, and design. You may start with comparable objects mixed up like this or placed in a large container.</p> <p>1</p>	 <p>"This is a blue plastic cup. We will put the other cups near this cup."</p> <p>"This is a white paper plate. We will put the plates in this area."</p> <p>One by one, organize all the objects by their shapes as you describe them. Talk about the objects' colors, sizes, materials, and other attributes. Ask your baby where the objects belong. For example, select the large red plate and ask your baby, "What does this go next to?" or "Where are the other plates?"</p> <p>2</p>
 <p>At the end of the activity, the objects should be sorted into categories. When doing these activities, your focus should be on teaching your baby that shapes provide important information about how categories are formed. The ability to categorize by shape helps infants and children learn words.</p> <p>3</p>	 <p>A more advanced activity that you can try with children who are at least 12 months old is to give your child objects that could be sorted by color or by shape and ask your child to organize them. You may want to demonstrate how to sort them both ways many times before checking to see if your child will sort them. Please don't be concerned if your baby plays with the toys and does no sorting. Another way to check if your baby has a strong shape bias is to check if your baby can recognize written words by their shapes.</p> <p>4</p>

Quiz 03-10

End of Module 03-10