

Deep feature and handcrafted feature - A combination for Material Classification

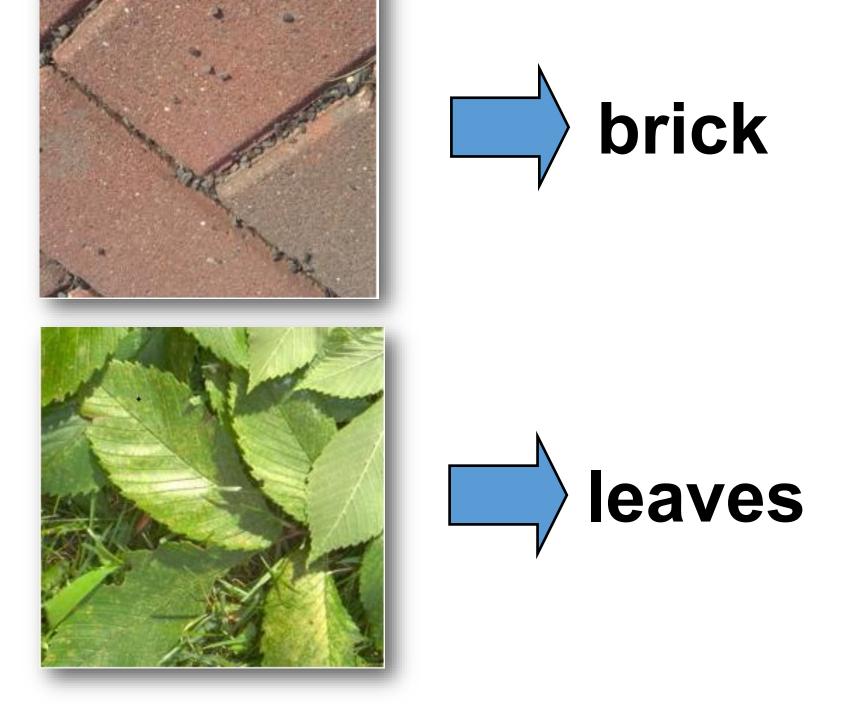
Truong Phuc Anh - Mai Tien Dung - Le Dinh Duy

University of Information Technology, Viet Nam

Introduction

What is it?

Answer the question "Which material is this object made of?".



Why do we need it?

Material is a valuable information for computer to understand and interact with the world.



Which bottle should we use to store hot water?



Auto-car: "Sorry. I don't know it is water".

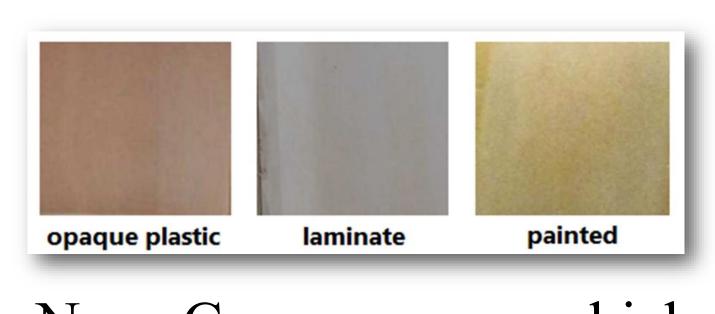
Challenges

Together, variants of shapes, textures, lighting conditions, clutter, etc. make it really challenge to guess the material with only a single image.

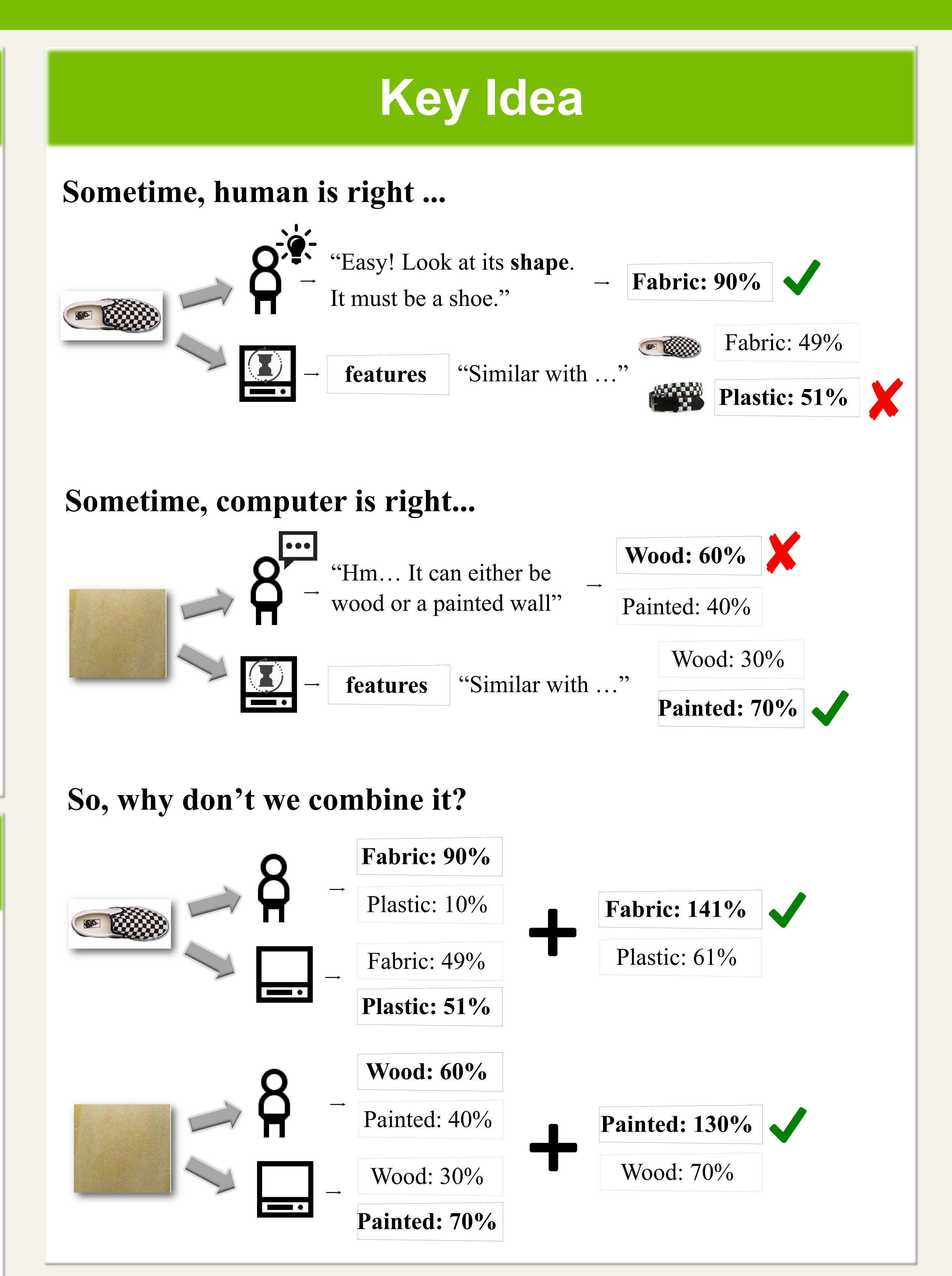
Even for human!



Cool! Look similar texture but it is not too hard.

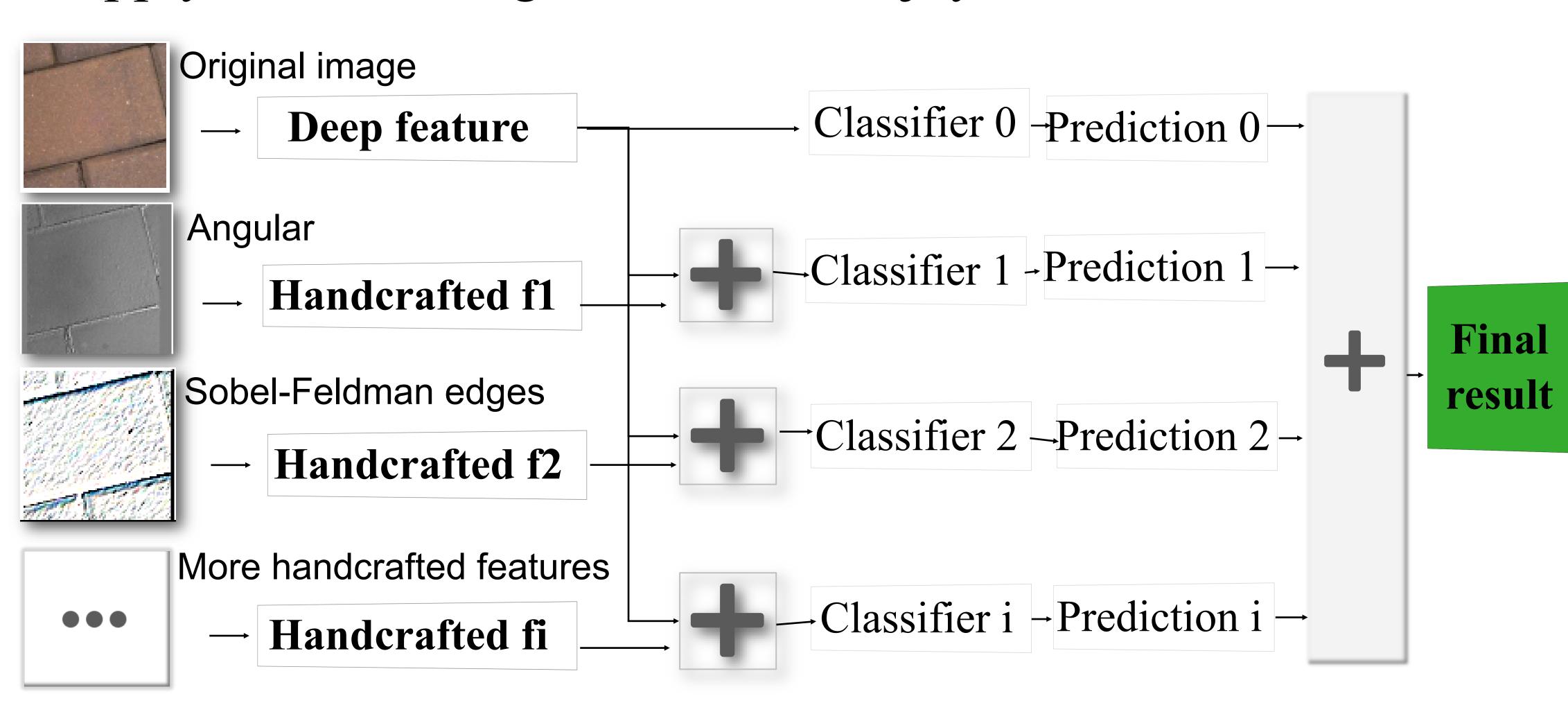


Now. Can use guess which material are they?



How it works

- 1. Choose some suitable handcrafted features for your own data
- 2. Apply the following method and enjoy.



Note: "suitable" means the feature we choose represent for information we use to classify images.

Ex. I can recognize type of material base on its shape so I choose angular and edges as additional information.

Results

