Advancing Visual Food Attractiveness Predictions for Healthy Food Recommender Systems

Media Futures

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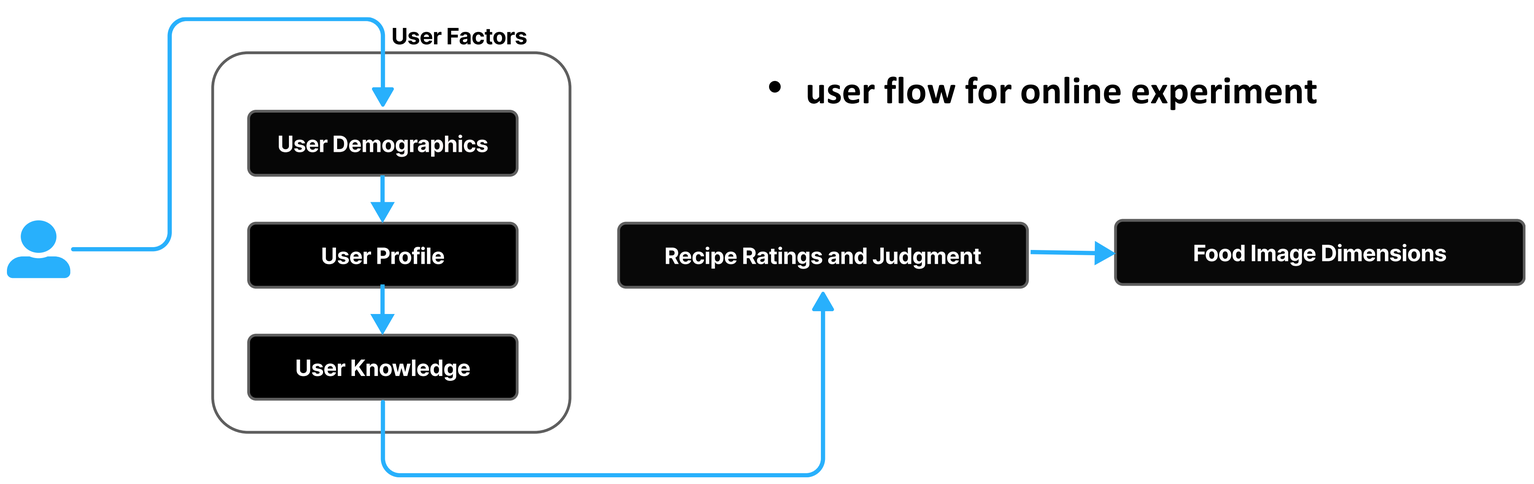
How users perceive the attractiveness of food recipe images ?

- ✓ **How deep features predict food image attractiveness ?**
- ✓ **What user characteristics, food knowledge, eating goals predict the attractiveness of a food image ?**
- ✓ **What image dimensions determine the attractiveness of food images ?**



- **user flow for online experiment**

Image dimensions

Food Image Dimension

	β(S.E)
Appearance	0.129 (0.061)*
Healthiness	0.077 (0.035)*
Taste	−0.005 (0.050)
Familiarity	0.0231 (0.038)
Constant	3.487 (0.365)***
R^2	0.011***
RMSE	1.855

User factors

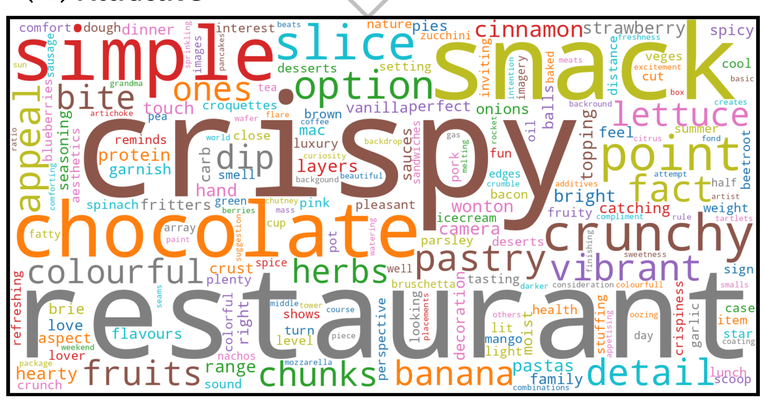
- ✓ **Recipe website usage**
- ✓ **Cooking skills**
- ✗ **Age**
- ✗ **Education**
- ✗ **Gender**
- ✗ **Eating goals**
- ✗ **Food knowledge**
- ✗ **Cooking experience**

	Image features Extractor		
	VGG16	ResNet	CLIP
R^2	0.351***	0.349***	0.357***
RMSE	1.500	1.491	1.501

Image features

Low-level Image Features	β (S.E)
Colourfulness	6.725 (1.521)***
Brightness	2.136 (0.155)***
Naturalness	1.925 (0.530)***
Entropy	1.026 (0.154)***
Saturation	−3.976 (1.020)***
Sharpness	−1.182 (1.187)*
RGBContrast	−1.782 (3.808)
Contrast	7.401 (11.101)
Constant	−6.884 (1.243)***
R^2	0.110***
RMSE	1.753

(A) **Attractive**



(B) **Unattractive**

Takeaways

- ☛ High level image features better predict food image attractiveness.
- ☛ Website usage and cooking skills influence food image attractiveness.
- ☛ Perceived healthiness and appearance influence users' judgment of food images.

PARTNERS

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