

Supplementary of OmniFood8K: Single-Image Nutrition Estimation via Hierarchical Frequency-Aligned Fusion

Dongjian Yu¹ Weiqing Min^{2,3} Qian Jiang¹ Xing Lin¹ Xin Jin^{1*} Shuqiang Jiang^{2,3}

¹School of Software, Yunnan University, China ²State Key Laboratory of AI Safety, Institute of Computing Technology, Chinese Academy of Sciences, China

³University of Chinese Academy of Sciences, China

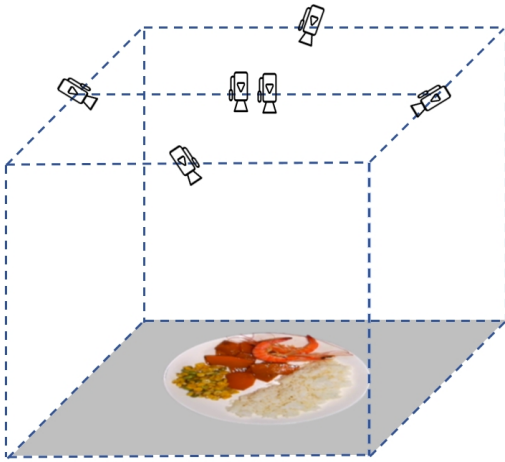


Figure 1. The six cameras used to capture multi-view images of the food.

1. Examples of the OmniFood8K dataset

The OmniFood8K dataset contains detailed information about various recipes and their corresponding cooking procedures. As shown in Figure 1, we use six cameras to simultaneously capture multi-view images of each food.

Figure 2 shows two examples from the OmniFood8K dataset, illustrating the preparation and weighing of ingredients for different foods. As shown in Tables 1 and 2, we present two recipe examples included in the OmniFood8K dataset: Scrambled Eggs with Tomatoes and Shredded Pork with Potatoes. Figures 3 and 4 show the key operation steps corresponding to each recipe. Figures 5, 6, 7, 8 and 9 illustrate several representative food scenes from the OmniFood8K dataset. Tables 3 and 4 list the names of the 165 food categories included in the OmniFood8K dataset.

*Corresponding author

2. Hikvision DS-E14a camera

We capture six-view images of food using six Hikvision DS-E14a cameras, each a USB 2.0 plug-and-play device with a 4-megapixel CMOS sensor and a fixed 3.6 mm lens offering an 80° field of view. They support up to 2560 × 1440 resolution, are powered via USB (DC 5 V ± 5%), and work on Windows, macOS, Linux, and Android without extra drivers.

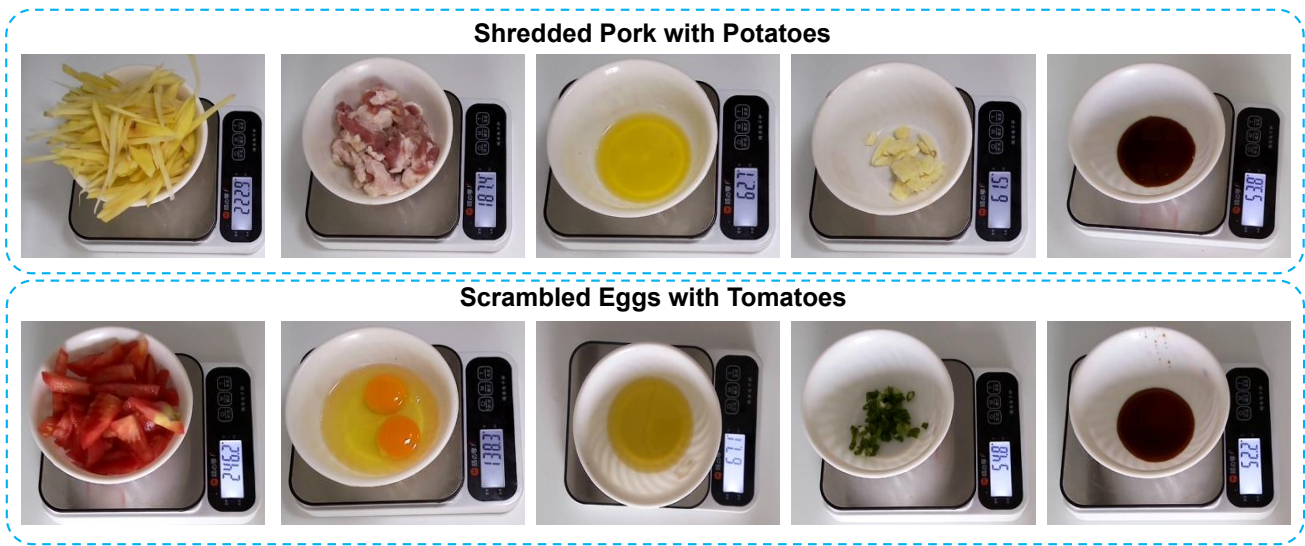


Figure 2. Examples of ingredient preparation and weighing from the OmniFood8K dataset. The displayed weights include the weight of the bowls.

Table 1. An example from the OmniFood8K dataset: the recipe of scrambled eggs with tomatoes.

Step	Description
1	Pour an appropriate amount of cooking oil into the pan.
2	When the oil is hot, pour the beaten eggs evenly into the pan.
3	Stir-fry gently to cook the eggs evenly on both sides.
4	Once the eggs are cooked, remove them from the pan and set aside.
5	Add the diced tomatoes into the pan and stir-fry.
6	Add a small amount of water.
7	Season with an appropriate amount of salt.
8	Return the cooked eggs to the pan.
9	Add light soy sauce and continue stir-frying.
10	Dish out and sprinkle with chopped scallions before serving.

Table 2. An example from the OmniFood8K dataset: the recipe of shredded pork with potatoes.

Step	Description
1	Heat the pan and add oil.
2	Add the shredded meat and stir-fry.
3	Add the garlic and stir-fry until it turns golden.
4	Add the shredded potatoes and continue stir-frying.
5	Add an appropriate amount of salt and continue stir-frying.
6	Add a suitable amount of soy sauce and stir-fry until done, then remove from the pan.



①



②



③



④



⑤



⑥



⑦



⑧



⑨

Figure 3. An example from OmniFood8K dataset: the cooking process of scrambled eggs with tomatoes.



Figure 4. An example from OmniFood8K dataset: the cooking process of scrambled eggs with tomatoes.



Figure 5. Representative food scene from the OmniFood8K dataset.



Figure 6. Representative food scene from the OmniFood8K dataset.



Figure 7. Representative food scene from the OmniFood8K dataset.



Figure 8. Representative food scene from the OmniFood8K dataset.



Figure 9. Representative food scene from the OmniFood8K dataset.

Table 3. Food Name List from the OmniFood8K Dataset

ID	Name	ID	Name	ID	Name
1	Mapo Tofu	2	Green Pepper Tofu	3	Green Pepper Potato Slices
4	Scallion Tofu	5	Scrambled Eggs with Tomato	6	Green Pepper Sausage
7	Green Pepper Shredded Potato	8	Cucumber Egg	9	Cucumber Sausage
10	Vinegar Shredded Potato	11	Stir-fried Green Pepper with Meat	12	Minced Meat with Eggplant
13	Shredded Pork with Potatoes	14	Green Pepper Eggplant	15	Pan-Fried Eggs with Green Peppers
16	Stir-fried Water Spinach	17	Fried Egg	18	Egg Fried Rice
19	Cucumber Salad	20	Seaweed Egg Drop Soup	21	Peas Stir-fried Corn
22	Stir-fried Corn Kernels	23	Stir-fried Carrot Slices	24	Stir-fried Cauliflower
25	Stir-fried Lotus Root Slices	26	Stir-fried Green Beans	27	Stir-fried Bean Sprouts
28	Peas with Sausage	29	Stir-fried Lettuce	30	Green Pepper Fried Egg
31	Carrot Shredded Meat	32	Boiled Peanuts	33	Stir-fried Garlic Stalks with Meat
34	Minced Meat with Corn Kernels	35	Stir-fried Celery with Meat	36	Stir-fried Yam
37	Stir-fried Eggs with Scallion	38	Bitter Melon Fried Egg	39	Stir-fried Bok Choy
40	Stir-fried Shanghai Green	41	Stir-fried Pork with Bean Pods	42	Shiitake Mushrooms with Meat
43	Leek Egg	44	Stir-fried Serrated Lettuce	45	Stir-fried Lotus Root Cubes
46	Stir-fried Garlic Sprout with Meat	47	Loofah Egg	48	Stir-fried Zucchini
49	Stir-fried Edamame	50	Tomato Egg Soup	51	Stir-fried Bitter Melon
52	Stir-fried Small Pumpkin Slices	53	Pumpkin Shreds with Meat	54	Stir-fried Firm Tofu
55	Stir-fried Bamboo Shoots	56	Bamboo Shoots with Meat	57	Tofu Skin with Red Pepper
58	Stir-fried Tomato	59	Stir-fried Leek	60	Stir-fried Green Beans with Meat
61	Kung Pao Chicken	62	Cauliflower with Meat	63	Loofah with Minced Meat
64	Carrot Shreds with Tofu Skin	65	Stir-fried Red Sausage	66	Stir-fried Water Caltrop
67	Stir-fried King Oyster Mushroom	68	King Oyster Mushroom with Meat	69	Stir-fried Gourd
70	Gourd with Meat	71	Stir-fried Okra	72	Green Pepper Red Sausage
73	Toona Fried Egg	74	Onion Fried Egg	75	Fennel Egg
76	Stir-fried Purple Cabbage	77	Stir-fried Cabbage	78	Stir-fried Lettuce Stem
79	Lettuce with Meat	80	Minced Meat with Winter Melon	81	Stir-fried Broccoli
82	Stir-fried Daylily	83	Stir-fried Old Pumpkin Slices	84	Stir-fried Clam
85	Steamed Prawns	86	Stir-fried Spinach	87	Fish Mint with Meat
88	Red Pepper Chicken Breast	89	Century Egg	90	Stir-fried Oyster Mushroom
91	Stir-fried White Radish	92	Broccoli with Sausage	93	Stir-fried Enoki Mushroom
94	Lily Bulb with Meat	95	Stir-fried Shepherd's Purse	96	Stir-fried Pea Sprouts
97	Stir-fried Quail Eggs	98	Dry-fried Green Beans	99	Stir-fried Pumpkin Tips
100	Stir-fried Taro	101	Vermicelli with Minced Meat	102	Pan-fried Chicken Wings

Table 4. Food Name List from the OmniFood8K Dataset

ID	Name	ID	Name	ID	Name
103	Cold Kelp Knots	104	Stir-fried Seafood Mushrooms	105	Dried Bean Curd with Red Pepper
106	Dried Bean Curd with Meat	107	Celery with Beef	108	Pan-fried Ribs
109	Red Pepper Tofu Skin	110	Fried Peanuts	111	Boiled Corn
112	Leek Fried Egg	113	Pan-fried Chicken Feet	114	Pan-fried Chicken Drumstick
115	Pan-fried White Fish	116	Stir-fried White Beans	117	Stir-fried Pumpkin Flower
118	Stir-fried Bean Puff	119	Stir-fried Aged Tofu	120	Stir-fried Baby Bok Choy
121	Stir-fried Pak Choi Tips	122	Stir-fried Bracken with Meat	123	Noodles
124	Stir-fried Fried Pork Skin	125	Steamed Egg	126	Stir-fried Mushrooms
127	Green Pepper Fried Veg Chicken	128	Stir-fried Pig Blood	129	Celery with Shrimp
130	Stir-fried Baby Cabbage	131	Cold Kelp Shreds	132	Stir-fried Kale
133	Green Pepper Dried Tofu	134	Stir-fried Wood Ear	135	Cold Sea Cabbage
136	Konjac with Green Pepper	137	Pan-fried Thousand-Layer Tofu	138	Shrimp with Egg
139	Stir-fried Crispy Pork	140	Pan-fried Chicken Wing Tips	141	Braised Fish
142	Plum	143	Peach	144	Red Plum
145	Apple	146	Pear	147	Banana
148	Dragon Fruit	149	Queen Mango	150	Fig
151	Watermelon	152	Kiwi	153	Passion Fruit
154	Jujube	155	Small Mango	156	Nectarine
157	Grape	158	Orange	159	Mandarin Orange
160	Blueberry	161	Cherry Tomato	162	Mangosteen
163	Longan	164	Purple Grape	165	Lychee