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Literature Survey:

S.NO	TITLE OF THE PAPER	AUTHOR	METHODS	OBSERVATION
1.	An Artificial Intelligence System for Dietary Assessment	Ya Lu , Thomai Stathopoulou , Maria F. Vasiloglou , Lillian F. Pinault , Colleen Kiley , Elias K. Spanakis and Stavroula Mougiakakou	Accurate estimation of nutritional information may lead to healthier diets and better clinical outcomes. We propose a dietary assessment system based on artificial intelligence (AI), named goFOODTM. The system can estimate the calorie and macronutrient content of a meal, on the sole basis of food images captured by a smartphone. goFOODTM requires an input of two meal images or a short video. For conventional single-camera smartphones, the images must be captured from two different viewing angles; smartphones equipped with two rear cameras require only a single press of the shutter button. The deep neural networks are used to process the two images and implements food detection, segmentation and recognition, while a 3D reconstruction algorithm estimates the food's volume. Each meal's calorie and macronutrient content is calculated from the food category, volume and the nutrient database. goFOODTM supports 319	Diet-related diseases—such as cardiovascular diseases and diabetes—are the leading causes of death globally. Macro-vascular diabetes complications such as atherosclerotic cardiovascular disease are also the most common cause of morbidity and mortality for individuals with diabetes , while the estimated cost for care of diagnosed diabetes accounts for 25% of health related expenses in the USA in 2017 . For individuals living with cardiovascular diseases, a balanced diet which is low in saturated and trans-unsaturated fat and high in fruits and vegetables, can reduce the risk of ischemic heart disease and stroke. People with diabetes need to monitor their diet, specifically their carbohydrate (CHO) intake, as it is a key factor that can

			fine-grained food categories, and has been validated on two multimedia databases that contain non-standardized and fast food meals. The experimental results demonstrate that goFOODTM performed better than experienced dietitians on the non-standardized meal database, and was comparable to them on the fast food database. goFOODTM provides a simple and efficient solution to the end-user for dietary assessment	affect blood glucose levels. Clinical studies on insulin dependent children and adolescents have shown that an error of ±20 grams in CHO estimation significant effects in controlling postprandial glycaemia [3]. These individuals have to receive training on CHO counting, which relies on empirical rules. This results in errors in their estimation, ranging from 10 to 15.4 grams . Moreover, other diseases, such as obesity, certain types of cancer, osteoporosis and dental diseases, have been associated by the World Health Organization (WHO) with diet and nutrition . All these diseases require monitoring and assessment of the individual's diet to different extents and for different reasons.
2.	Relative validity of a mobile AI-technology–assisted dietary assessment in adolescent	Nguyen, Phuong Hong; Tran, Lan Mai	Dietary intake was assessed using 3 methods: FRANI, WR, and 24HRs undertaken on 3 nonconsecutive days.	We assessed the relative validity of FRANI (Food Recognition Assistance and Nudging Insights), a

| | | | | Equivalence of nutrient intakes was tested using mixed-effects models adjusting for repeated measures, using 10%, 15%, and 20% bounds. The concordance correlation coefficient (CCC) was used to assess the agreement between methods. Sources of errors were identified for memory and portion-size estimation bias. | mobile artificial intelligence (AI) application for dietary assessment in adolescent females (n = 36) aged 12–18 y in Vietnam, against a weighed records (WR) standard and compared FRANI performance with a multi-pass 24-h recall (24HR). |

3.	A survey on AI nutrition recommender systems	ThomasTheodoridis,Vassilios Solachidis, Kosmas Dimitropoulos, Lazaros Gymnopoulos, Petros Daras	The goal of this work is to provide an overview of existing approaches regarding AI nutrition recommender systems. A breakdown of such systems into task-specific components is presented, as well as methodologies concerned with each individual component. The components of an idealized AI nutrition recommender system are presented and compared to state-of-the-art approaches in the corresponding area of research. Finally, identified issues in some of these areas are also discussed.	Eating is for some people just a necessary everyday activity, while for others, a unique moment in their daily schedule that gives them great enjoyment. No matter the side that each person has chosen, it is becoming more and more evident that the role food plays in our overall health is of utmost importance. From a superficial point of view, our bodies need a specific amount of energy to function properly and food provides just this. However, in reality, not all calories are created equal; the accompanying nutrients play a vital role in the way food is processed by the human body, thus affecting our overall health. To this end, the consumption of a wide variety of food items is necessary in order for the human body to obtain the right amounts of nutrients. Failing to follow such a well-balanced diet, in combination with a generally unhealthy way of living, has been shown to increase the risk for cardiovascular disease, type II diabetes and some forms of cancer. Taking all these factors into consideration, food intake monitoring can provide substantial benefits in certain cases. Traditional approaches towards food intake monitoring relied on 24-hour recalls and food frequency questionnaires in

				order to obtain relevant information. Although effective to some extent, the margin of error was high and the process was labour-intensive. In the last few years, the convergence of several technological advances, both from a hardware and software perspective, has made possible the existence of automated systems that can analyze users' eating habits and preferences, and provide recommendations in order to achieve specific goals (e.g., weight loss, muscle gain or eating healthy).

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