This is an expert system designed to assess an individual’s diet and provide personalized nutrition recommendations. It automates the basic assessment questionnaire that patients are often asked at the beginning of their dietitian appointment, such as gender, weight, height, age, eating habits, health goals, and main reason for the visit.

This technology will help patients to adjust their eating habits and meet their nutritional needs. It also helps dietitians save time by prioritizing areas of nutritional need and bypassing simple questions that don’t necessitate face-to-face interaction. With the extra time, dietitians would be able to either see more patients or spend extra one-on-one time with patients that have complex health conditions. The expert system can also reduce the cost of the nutrition consultation because dietitians would be able to address the problem and give the necessary advice in less time. In many cases patients may not even need to see a dietitian after the assessment because this system can guide them on how to reach their goals by suggesting simple and personalized changes to their diet. For example, if someone was told by their physician that they have osteopenia (weaker bones), then the system could provide advice to increase bone mass based on the patient’s imputed calcium and vitamin D intake, number of dairy servings per day and the frequency of resistance training sessions per week. Another example would be the ability of the artificial intelligence system to give nutrition tips to patients who are dealing with hypertension (high blood pressure) to reduce their blood pressure based on their age, weight, gender, and calculated salt intake.  This system also ensures the patient receives sound evidence based nutrition information rather than unscientific or potentially dangerous information they may find on the internet.

The ultimate goal is allowing people to have access to the expert dietitian system in the comfort of their own homes. This will allow them to have a routine check up on their diet as often as they like without having to go through the process of visiting a nutritionist. In turn, this will reduce the time and cost to the patient seeking nutrition counselling. Patients are also more likely to seek nutrition information online as there is still a hesitation towards seeing a dietitian due to fear of being judged or the misconception that they are the “food police”.

We interviewed an expert dietitian with 4 years of outpatient clinical experience. She helped us to categorize patients into the five most common patient concerns, such as weight loss, blood pressure, cholesterol, diabetes, and bone health. In her practice, she would recommend dietary changes based on the patient’s specific health problems after collecting general biometric information from them - the same information that our AI system is designed to gather instead.