

Culinary arts and Computer Science

Thought depends absolutely on the stomach.

— VOLTAIRE, letter to d’Alembert (1770)

Of course we know that our browsers use “cookies” and “menus.” And there’s an organization called CodeChef, which features monthly Code-Off contests. But the relation between CS and food actually extends to the very core of our discipline, since we are fundamentally concerned with the systematic study of processes. Long before computer science was invented, anonymous chefs discovered many of the basic principles that guide us today: step-by-step sequences of instructions; conditional execution; loops; randomization; parallelism; lazy evaluation; late binding; crowd sourcing; etc.

Thank goodness for toasting, roasting, poaching, basting, braising, broiling, brewing, baking, kneading, and for the ability to communicate those techniques from generation to generation!

Centuries of experimentation have shown that such tasty algorithms will output combinations of nature’s ingredients that are unusually delicious and nutritious. But it’s also clear that many more dishes remain to be discovered, because only a minuscule fraction of the possibilities have ever been tried. The number of foodstuffs is bounded, but the number of ways to combine and prepare them is exponential. Even if we limit ourselves to polynomial time, we’ll never be able to explore more than a tiny part of this vast territory.

For example, did you know that fresh blueberries and avocados, wrapped in won-ton skins, are quite delicious? By simply combining three ingredients, chosen at random from three different aisles of your local grocery store, chances are good that you’ll be the first to discover something worth sharing.

When I cook for myself, I often enjoy using the “Venn diagram method,” with which I can taste all subsets of a given set of flavors. For instance, I might put fresh eggs, garlic, mint, and peas into a skillet, in such a way that each of the 15 nonempty combinations takes up about 1/15th of the total area. Then, if I refrain from stirring, I’ll be able to eat my lunch directly out of the pan, savoring each of the possibilities in isolation.

Biochemists have been introducing revolutionary new gustatory experiences known as *molecular gastronomy*. Do computer scientists have anything similar to offer to the world, something that might deserve the name *cuisine à la informatique*? I think we do: We can potentially enrich gastronomy by incorporating what we’ve learned about *parameters*.

Indeed, I’ve been wishing for an app that my wife and I could use daily, called perhaps METAFOOD. This app would know exactly what ingredients we currently have in our pantry and refrigerator, as well as what kinds of preparation equipment we own. We’d ask METAFOOD to suggest a (possibly random) menu based on what’s on hand and the amount of time available. Once we’ve agreed on the goal, METAFOOD would tell us what to do first, what to do next, etc. It would watch our progress—changing course, if necessary, like the navigation system in an automobile. Naturally we’d be communicating with METAFOOD via microphone and camera, not by touchscreen, because our hands would usually be covered with goeey stuff. Afterward METAFOOD would help plan a shopping list, etc.

Bon appétit!

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