

Kellogg's

www.Kelloggs.com

Personalized Pop-Tarts – Mobile App + 3D Printed Designs

3D Printed Pop-Tarts: Bringing families together through the delight of personalized Pop-Tart designs

Description of Project

Kellogg's is a brand with global reach that was founded and headquartered right here in Michigan. We strive to be innovative with not only our foods, but the use of new technologies as well. The Design and Innovation team within Kellogg's IT was established in 2015 to look for breakthrough technologies and how it can be applied to establish new lines of business. We actively pursue industry-disrupting product designs and technology to engage our consumers in non-traditional ways. This project brings together one of our most popular brands, Pop-Tarts, with the emerging 3D printed foods space. Kellogg's company vision is "To enrich and delight the world through foods and brands that matter." This project aims to do just that by creating the new and different.

Students will deliver a complete working system to personalize the face of a Pop-Tart by creating an Android Mobile App user interface integrated to modified 3D food printer, and developing an optimal "frosting" material for the system.

This project will challenge students to work together in a truly multidisciplinary manner to deliver the best product possible for the user. The user "drawing" options will need to be balanced with the capability of the print/frosting systems to deliver a physical rendering of the design on the screen. Mechanical design and "frosting" formulation design choices will have significant impact on each other.

A number of commercial 3D food printers have become available over the past 5 years. Our team has evaluated a range of those available; No working "off the shelf" option exists. The students will need to modify existing commercial products (printers, extrusion cartridges, etc.) to create their working system through the design, fabrication and integration of unique parts. The capability of the system to print an interesting (tasty) design will depend as much on the "frosting" as the capability of the printer. The printer/frosting subteams will have additional support from various R&D based Engineers and Food Scientists.

The Mobile App Subteam will have additional support the Pop-Tarts Brand Manager, Tia Cummings. She will help the team to better understand the personas of targeted uses and how Kellogg's views

management of one of their premier Brands. The team will be provided with access to the Pop-Tarts Brand Book, which includes the brand's style guide, as well as logos and other graphic assets.

Kellogg's will also have an advanced release of the Foodini 3D Food Printer (<https://www.naturalmachines.com>) available, should the team wish to experiment with the latest 3D food printing technology during one of their site visits.

Phase 1: BASELINE GOAL

- From modified off the shelf components and individually designed parts integrate a system that will reproducibly print (extrude) a simple graphic component of a food grade, edible "frosting" on a PopTart. The component should be 1 "slice" of an eventual 3D design. Drive the design of the graphic from an integrated hard connection / Android App.
- Deliver an Android App that will allow a "child" and "grandparent" to co-design the face of a Pop-Tart. Resolve the graphic into CAD readable "slices" integrated to the printer.
- Develop the formulation for 1 edible material that can be successfully "printed" onto the face of a pop-tart.

Phase 2: Stretch Goals

- Drive the printer wirelessly
- Deliver an edible component that tastes good when eaten on top of the Poptart.
- Color the edible component in 2 contrasting colors.

Phase III: Stretch Goals (any of these options would be valuable)

- Control 2 print cartridges without manual intervention steps.
- Print 2 overlaid "slices" to achieve a 3-D effect

Location

Student work will take place on campus, with periodic office visits for formal presentations to Kellogg's World Headquarters, located in Battle Creek, Michigan.

Project Sponsor Mentor

Simon Wang, Design and Innovation Catalyst, Global Commercial Business Solution



Simon graduated from the University of Michigan in 2008, with a B.S. in IOE. He has been with Kellogg’s for 4 years. Throughout the majority of his career at Kellogg’s, he has led global digital activations through managing the business relationship between global brands, their agencies, and the internal IT team. At the start of 2016, he joined the new Design and Innovation team within Kellogg’s IT.

Tia Cummings, Senior Brand Manager, Pop-tarts

Tia has been with Kellogg’s for more 4 years, working on Pop-Tarts. She has experience across the world of CPG through brands like L’Oreal, Johnson & Johnson, and P&G. Tia has a B.S. in Chemical Engineering from Hampton University, and a MBA from Purdue University.

Project Faculty Mentor

Please advise if there are any specific members of the faculty whom you would like us to approach for your project. All projects receive a faculty mentor for each student team.

Key Skills & Project Roles

MDP’s Recommendations for Student Team Members

Project Roles		Likely Majors
Mechanical Design and Mechatronics	Part Design, Mechatronic I/O, Extrusion	Mechanical Engineering / Computer Engineering
Materials Development	Rheology of complex systems (foods), Formulation	Materials Science, Chemical Engineering, possibly Mechanical Engineering,
Mobile App development	Android Programming	Computer Science or experience with Android programming
Customer Experience - Product Design, UI/UX design, Customer discovery, design of the “consumer kit” (1 student)		Art & Design, BBA, School of Information (UI/UX)

Desired Additional Skills (Any of these skills would be a desirable addition to the team)

- Knowledge/Experience/Passion for food, cooking, food science
- Laboratory experience sterile or clean environments (food, biology, medicine)
- Developed CAD skills
- Experience working with 3D Printers
- Experience working with children/interviewing children

Company Overview

More than 100 years ago, W.K. Kellogg founded our company through his belief in nutrition and dedication to well-being. Motivated by a passion for people, quality and innovation, he created the first-ever breakfast cereal and then shaped an entire industry. Kellogg soon became a household name; his signature, a trusted mark.

Today, W.K. Kellogg's legacy continues to inspire us. Working together, we create moments of delight for people around the world with our well-loved brands. From the sublime satisfaction in a bite of All-Bran cereal and bars to the crunch and surprise in a spoonful of Krave cereal – whether it's MorningStar Farms veggie burgers grilling golden brown, Zucaritas cereal meeting that first splash of milk in the morning or Keebler Fudge Shoppe Fudge Stripe cookies as an afternoon snack – our foods bring smiles to faces across the globe all day, every day.

Our company is a place where innovation lives on, where we never stop learning and where we're excited about tomorrow. And it all started simply with a single corn flake and W.K. Kellogg's belief in better food for all.

Legal Requirements

Citizenship and Right to Work Options (please select)

- This project is open to all students regardless of citizenship status
Please delete non-relevant items above, and add any additional information as needed.

Intellectual Property Agreements / Non-Disclosure Agreements (please select)

- Students will sign the standard MDP IP/NDA agreement

Internship Information

- Summer Internship Available for all student participants based on interviews to be conducted in November/December 2016.

Optional Relevant pictures (prior student teams, products, etc)

