

Company: Allerspec

Project: Food Allergy Detection Device

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Overview: Food allergies conservatively impact about 33.5 million people in the United States (Gupta et al., 2011, 2019). This places a large financial burden on families of about \$4,000 per year per child (Gupta et al., 2018), not to mention the stress placed on the hospital system of 200,000 emergency room (ER) visits due to food allergies (Gupta et al., 2013). Additionally, food allergy prevalence among children is on the rise. According to a 2013 study performed by Jackson et al., food allergy prevalence among children has increased by 50% between 1997 and 2011.

AllerSpec's device will be hand-held (size and shape of a smart phone), easy to use, and effective. It will use near-infrared (NIR) spectroscopy technology to scan a plate of food. The near-infrared spectrum offers the ideal combination of scanning depth and accuracy that can scan an entire plate of food without leaving any gaps.

The results of the scan will be sent wirelessly to the cloud, where the computing will be done. This will not only save valuable physical space in the device but also increase computing power exponentially. After the data is processed by AllerSpec's proprietary algorithm, the results will be sent to a smart phone app so the user can see if the dish is safe to eat.

There are some comparable devices that are both in development and commercially available. Many of them use the "lab-on-chip" approach and test user-provided samples of the food. However, since these devices only test a small sample of the food, the users are left susceptible to a reaction from somewhere else on the plate. Other devices that attempt to scan the food are only able to scan the surface or have limitations in the types of food they can scan.