



Local Makers Helping Frontline COVID-19 Workers

April 2020

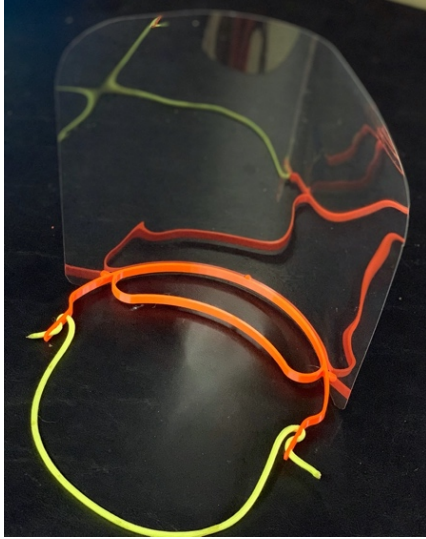
Quest Advisory Board Member June Yu has a day job as Executive Director for National Laboratories Programs at the University of California Office of the President, and previously worked as an optical physicist at LLNL. Her husband, Brian McGinnis, is a retired Director of Product Development for Neophotonics and was the program leader for ultra-high capacity optical receivers and multiplexers used in the transmission backbone of today's Internet. In mid-March, when they started to hear about the shortage of personnel protective equipment (PPE) for frontline hospital and first responders, June and Brian began to experiment with ways they might help. Fast forward one month, and they have donated a variety of DIY PPE items to a



number of organizations and people in the community. This included over 600 3D printed face shields donated to the Contra Costa County Health Services in less than 3 weeks. They just learned this past Friday that all paramedics in the county are now equipped with their face shields.

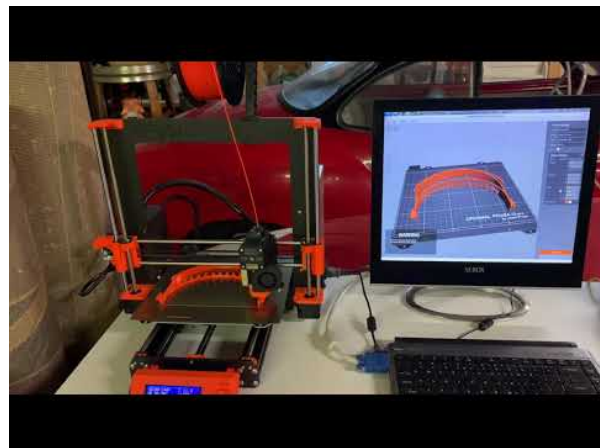
Early on, they deliberated and decided on a set of principles to guide their donation effort, including:

- Openly sharing their design work online so that anyone can access and leverage their efforts
- Being mindful not to add to supply chain issues, through deliberate choices of materials and innovative designs
- Gaining understanding of end-user needs through partnerships
- Being mindful that donation efforts are a temporary stop-gap to address acute needs



For the face shields, Brian embarked on several design iterations to speed up the 3D printing process. His final design yielded a factor of 7 reduction in print time and a 3.5 times reduction in material usage. Cost of materials for one of their fully assembled face shields is now less than one dollar. Their neighbors Joyce and Steve Traugott, and Lloyd Hackel and Lee Kornstedt enthusiastically assisted in the donation effort by making available the capacity of additional 3D printers. Children also joined in the effort, with daughter Jessica Traugott operating their 3D printer, and Brian and June's daughter Claire cleaning and packing the face shields for delivery. Others in the community have recently reached out as well to offer their services and equipment for future donations, adding to the grassroots manufacturing network.

June said, "It has been an invigorating, fun, and at the same time exhausting one month". They recently learned that a student is using their designs and printing face shields for his mother who is a nurse, "It warms our hearts as that's what we had hoped would happen when Brian put all of his design work online... our little 3D printer has been running nearly 24/7 for several weeks straight now...I wish every kid who wants a 3D printer can have access to one to play with. There are so many things to learn and do with it, from software to hardware to design. It's only limited by imagination."



The engineering process

June and Brian's work illustrates the process most successful engineering and manufacturing efforts follow: identify a need, brainstorm possible solutions, design and build prototypes, then test and improve. Also key is developing partnerships and collaborators for their input. Many people follow this process intuitively to some degree in their everyday lives.

Course corrections and new ideas surfaced throughout this process, and June and Brian enjoyed the opportunity for teamwork and complementing each other's strengths. Brian has also been perfecting his face shield headband design to be more easily mass produced with traditional manufacturing techniques such as laser cutting and injection molding.

[Read more](#) about June and Brian's inspiring efforts.

See the face shield design and make your own [here](#) !