Faculty Member Contact Information

Name	Jagath Gunasekera
Contact Info	
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Department	School of Engineering

1 Funded, 1 Unfunded URCA Assistant

	This position is **ONLY** open to students who have declared a major in this discipline.	M
	This project deals with social justice issues.	
	This project deals with sustainability (green) issues.	
✓	This project deals with human health and wellness issues.	
	This project deals with community outreach.	
	This mentor's project is interdisciplinary in nature.	

Are you willing to work with students from outside of your discipline? If yes, which other disciplines?

Yes

How many hours per week will your student(s) be required to work in this position?
(Minimum is 6 hours per week; typical is 9)

9

Will it be possible for your student(s) to earn course credit?

No

Location of research/creative activities:

School of Engineering RM1082

Brief description of the nature of the research/creative activity?

We are collaborating with the holder of U.S. Patent US11318333B1 to develop a groundbreaking respiratory protection system.

Our goal is to create a fully enclosed respiratory unit that provides the same level of protection as existing high-end products—typically priced around $1,500—but at a significantly lower cost of approximately $300.

This affordability will make the product more accessible globally, especially in regions that urgently need reliable protection against airborne threats. The system is designed to help combat infectious diseases such as Ebola, COVID-19, and smallpox. It can also be used in everyday environments to protect against mold, dust, and pollen.

We are currently in the final stages of product development and are excited about the potential global impact of this innovation.

Brief description of student responsibilities?

You will be responsible for generating a mold for the face shield component of the respirator. In addition, you will make minor modifications to the existing 3D model of the electronics enclosure to accommodate more efficient batteries. This work will involve 3D modeling using CAD software such as Siemens NX, Fusion 360, or SolidWorks, as well as prototyping using a Form 4L resin 3D printer.

URCA Assistant positions are designed to provide students with *research or creative activities* experience. As such, there should be measurable, appropriate outcome goals. What exactly should your student(s) have learned by the end of this experience?

Yes

Requirements of Students

If the position(s) require students to be available at certain times each week (as opposed to them being able to set their own hours) please indicate all required days and times:

If the location of the research/creative activities involves off campus work, must students provide their own transportation?

Must students have taken any prerequisite classes? Please list classes and preferred grades:

Other requirements or notes to applicants:

3D modeling skills are required.