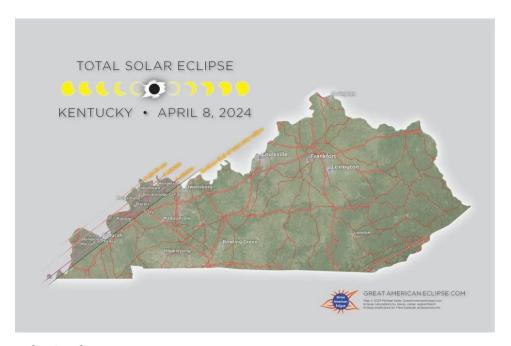https://www.bgdailynews.com/news/wku-students-app-lets-you-aid-eclipse-research/article_859ba2f3-9943-5fd4-a866-1f65a4a2c7f1.html

WKU students' app lets you aid eclipse research

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Submitted

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A total eclipse in April 2024 will capture the attention of millions across North America, including parts of western Kentucky.

But a team from Western Kentucky University's XR Lab, composed mainly of students, wants people to do more than watch in awe.

The team has been hard at work developing "SunSketcher," an app that allows "citizen scientists" to aid in real eclipse research.

Travis Peden, a senior computer science major and lead Android developer, said users can set up their phone camera to capture the eclipse and its "Baily's Beads" – variations in light along the edge of a lunar eclipse caused by valleys and peaks on the moon's surface.

"When I heard (the lab) was doing a project that could possibly end up disproving theories of gravity, I was very attached to the idea and wanted to join," Peden said.

Baily's Beads allow observers to better measure the shape and size of the sun behind the moon, which could impact how we understand gravity, our solar system and how large bodies interact in space.

Peden said SunSketcher stores the photos on a server that allows researchers at NASA to access and study the results.

It won't come easily though, Peden said. They hope to gather around a million users in time for the April 8 eclipse, spread out over the path of the total solar eclipse which spans 13 U.S. states.

"With the amount of major cities across the U.S. it will go through, we expect to get a lot of people who are already in the path," Peden said. "We also expect to get people that are

coming from all over the country, maybe even other places ... to find a nicer spot to view it from."

Peden said the more variety they receive in location and quality, the more useful their data will prove for researchers.

The team will run its first live test Oct. 14 in Odessa, Texas, utilizing around 100 volunteers from the University of Texas Permian Basin.

Volunteers will host a watch party for an annular eclipse that day, wherein the moon is in a position to cast a less intense eclipse. The data they collect won't be particularly useful, but it will prepare them for the big day in April.

Starr May, a junior computer science and English major and the app's networking and database developer, oversees the logistical challenge of compiling over a million submissions into a central place.

Peden will travel down for the event while May stays back to monitor logistics.

"We only really have this one eclipse to be able to gather data and say we're confident that the app works how we need it to," May said. "But once we get this data, what are the tweaks that we can make so we're maximizing the scientific usefulness of our data?"

May said the project has been one of the most tangible and useful experiences she's had through college. It has been a "good blend of art and science" that puts into perspective the enormity of our solar system.

"I think it's emotionally moving to understand something as massive as our solar system," May said. "It's something we see every day, but we don't know a whole lot about it."

May said a project like this isn't simple – it requires a slew of disciplines to make it work, from graphic artists to app developers designing the app to astronomers and scientists who help guide the research.

"I cannot see a project like this coming to fruition without the XR lab," May said. "The lab has faculty members with expertise in all these different fields who can say, 'oh, I know someone who can help with this.' It has been a huge help in getting all the facets of this project accounted for."

Janessa Unseld, a junior psychological sciences major with a user experience certificate, has worked as a web developer, UX designer and brand strategist for the app.

Unseld began doing web development around two years ago, long before being invited to join the project.

"I had an intro-level skill set, but actually digging my teeth in with (SunSketcher) really helped me exponentially grow," she said.

She said WKU professors and project investigators Gordon Emslie, Greg Arbuckle and Michael Galloway have

given them regular guidance but ultimately allow students to take the lead.

"Emslie, for example, showed the website when it was very early on to his physics classes and was like, 'email Janessa with your complaints,' so thank you for that, Dr. Emslie," Unseld joked.

The app is expected to hit the app stores for both Android and iOS devices around May 2024. Updates and information on contributing can be found at SunSketcher.org.

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