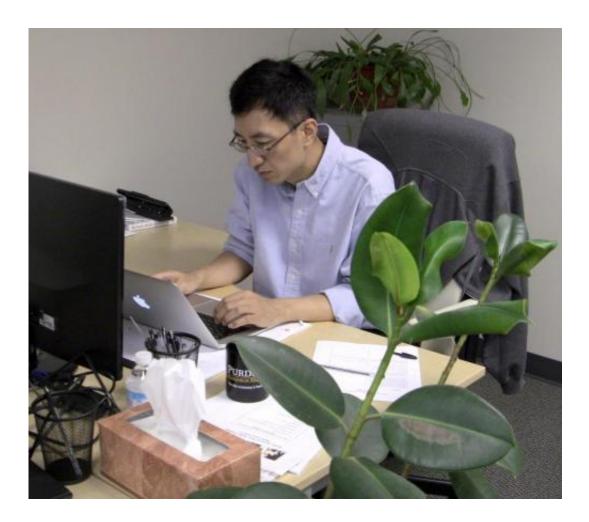# Startup helps app developers identify code that quickly drains smartphone batteries

October 9 2014

Y. Charlie Hu, CEO and co-founder of Mobile Enerlytics LLC, writes the company's software that helps app developers identify energy "hotspots," or sections of code that drain battery energy quickly. Mobile Enerlytics is one of more than 20 startups created in fiscal year 2014 from Purdue University innovations. Credit: Purdue Research Foundation photo

An official at a software startup based on a Purdue University innovation says his company could extend the life of smartphone batteries by helping application developers identify code that drains batteries quickly.

Y. Charlie Hu, CEO and co-founder of Mobile Enerlytics LLC, said smartphone batteries drain faster when users interact with the phone, including when they touch the screen to manipulate mobile applications. Smartphones usually are suspended when a user has not interacted with the phone over a certain amount of time, which means little energy is used.

"There are two ways to address the problem of smartphone batteries draining quickly: the first is to invent a better battery. Battery capacity, which is the amount of energy that can be packed into a fixed form factor, is reaching its limit," he said. "The other option is to make smartphone apps more energy efficient so they drain less of the battery. Mobile Enerlytics is developing software to make that happen."

Purdue researchers have developed the technology that could help mobile app developers analyze millions of lines of code to identify "hotspots," or sections of code that drain most of the energy. The technology has been exclusively licensed to Mobile Enerlytics through the Purdue Office of Technology Commercialization. More than 20 startups based on Purdue intellectual property were launched in the 2014 fiscal year.

Hu, who also is a professor in Purdue's School of Electrical and Computer Engineering, first developed the technology in his lab at Purdue. One of Mobile Enerlytics' products is patent-pending software called Eprof, which helps developers pinpoint the energy hotspots in an app's source code. A demonstration is available at mobileenerlytics.com/eprof

"As mobile apps become more feature-rich, code easily reaches more than one million lines," he said. "My colleagues and I have found that a single line of code can create an energy hotspot. Sometimes simply changing the data structure or moving around a single line of code drastically reduces the resulting energy drain."

Hu said Mobile Enerlytics already has launched Estar, a free, no-ads mobile app that shows smartphone users how fast different mobile apps in Google Play drain smartphone batteries.

"When a smartphone user starts Estar, it provides two options: to find energy-efficient apps in the app market or to stop power-hungry apps running on the phone," he said. "When the first option is chosen, Estar provides a color-coded, five-star rating system that shows how fast a smartphone app will drain the phone battery, in the foreground and in the background, relative to other apps in the same category. Estar also makes a daily recommendation of apps based both on popularity and energy ratings."

Hu said Mobile Enerlytics has benefited from the entrepreneurial environment developed by the Purdue Office of Technology Commercialization and Purdue Foundry.

"This environment includes everything from IP protection to developing business models and marketing strategies to marketing and public relations," he said. "These are the essential ingredients needed in launching a startup that transforms technologies to a successful business."

Provided by Purdue University

Citation: Startup helps app developers identify code that quickly drains smartphone batteries