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System and Method for Profiling Mobile Device Graphics Energy

This holistic graphics energy diagnosis system precisely profiles the energy consumption of all layers of the graphics-rendering stack to automatically identify energy hotspots and bugs in application source code.

Graphics is one of the major energy drain sources in smartphone apps. Current graphics energy diagnostic tools can profile the resource usage from certain layers, but fall short in stitching together profiling information across all the layers, which developers need in order to provide the visual effect, energy trade-off at the app source code level.

Researchers at Purdue University have developed a holistic graphics energy diagnosis method and system that allows developers to systematically diagnose energy inefficiencies in app graphics operations at the app source-code level. This technology precisely profiles the energy drain of all layers of the graphics-rendering stack due to graphics operations issued at the app source code. Such profiling information of app graphics energy drain can automatically identify energy hotspots and potential energy bugs in the app source code to the app developers, who can change the code to reduce the app energy drain.

Advantages:

-Precisely quantify the visual effect of each UI update

-Provides complete energy profiling of an apps graphic operations

Potential Application:

-Smartphone applications

-Mobile operating systems

-Graphics processing unit (GPU)

TRL: 4

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