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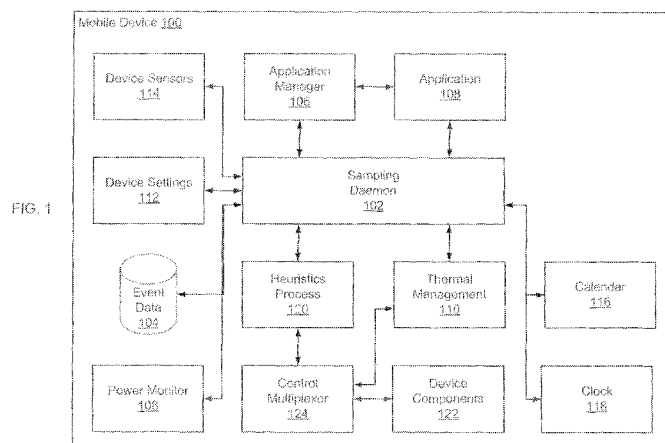
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(54) Title: INITIATING BACKGROUND UPDATES BASED ON USER ACTIVITY



(57) Abstract: In some implementations, a mobile device can be configured to monitor environmental, system and user events. The occurrence of one or more events can trigger adjustments to system settings. In some implementations, the mobile device can be configured to keep frequently invoked applications up to date based on a forecast of predicted invocations by the user. In some implementations, the mobile device can receive push notifications associated with applications that indicate that new content is available for the applications to download. The mobile device can launch the applications associated with the push notifications in the background and download the new content. In some implementations, before running an application or accessing a network interface, the mobile device can be configured to check energy and data budgets and environmental conditions of the mobile device to preserve a high quality user experience.

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## AMENDED CLAIMS

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What is Claimed is:

1. A method comprising:

- receiving, by a processor on a mobile device, application invocation data corresponding to user initiated application invocations;
- generating, by the processor, the application invocation forecast based on the invocation data, the application invocation forecast indicating periods of time during a day when applications are likely to be invoked;
- determining, by the processor, that a current time of day coincides with a particular one of the periods of time; and
- in response to the determination, generating, by the processor, information predicting applications that will likely be invoked by a user during the particular period of time.

2. The method of claim 1, further comprising:

- determining a probability for each of a plurality of applications on the mobile device that the respective application will be invoked by a user during the particular period of time; and
- generating information identifying applications to launch at the current time based on the determined probabilities for each of the plurality of applications, where the information identifies applications in the plurality of applications associated with a probability that is greater than zero.

3. The method of claim 2, further comprising:

- determining to launch a particular application in the identified applications based on a data budget, an energy budget, and thermal conditions of the mobile device.

4. The method of claim 1, wherein the application invocation forecast is generated by calculating a probability that an application will be invoked by a user on the mobile device during a window of time.

5. The method of claim 2, wherein determining the probability includes performing time series modeling on the invocation data collected by the first process.

6. The method of claim 2, wherein determining the probability includes analyzing recent, daily and weekly user invocation history to calculate a probability that the user will invoke an application at about the current time.

7. A method comprising:

- receiving, at a first process on a mobile device, a background data transfer request from a second process on the mobile device;
- determining whether to perform the background data transfer request based budgeting constraints or environmental conditions of the mobile device; and
- storing the background data transfer request when it is not ok to perform the data transfer request.
8. The method of claim 7, wherein determining whether to perform the background data transfer request is based on a data budget, an energy budget, or thermal conditions of the mobile device.
9. The method of claim 7, wherein the second process is terminated or suspended after the background data request is received by the first process.
10. The method of claim 7, further comprising:
- determining that the background data transfer request can be performed based budgeting constraints or environmental conditions of the mobile device
- performing a background data transfer indicated by the background data transfer request when budgeting constraints and environmental conditions of the mobile device allow the background data transfer.
11. The method of claim 10, further comprising launching the second process when the background data transfer is completed.
12. The method of claim 10, further comprising:
- while performing the background data transfer, suspending the background data transfer when a poor network connection is detected.
13. The method of claim 10, further comprising:
- while performing the background data transfer, suspending the background data transfer when one or more budgets are exceeded.
14. A mobile device comprising:
- one or more processors; and
- a computer-readable medium including one or more sequences of instructions which, when executed by the one or more processors, causes:
- receiving application invocation data corresponding to user initiated application invocations;

generating the application invocation forecast based on the invocation data, the application invocation forecast indicating periods of time during a day when applications are likely to be invoked;  
determining that a current time of day coincides with a particular one of the periods of time; and  
in response to the determination, generating information predicting applications that will likely be invoked by a user during the particular period of time.

15. The mobile device of claim 14, wherein the instructions cause:  
determining a probability for each of a plurality of applications on the mobile device that the respective application will be invoked by a user at about the current time; and  
generating information identifying applications to launch at the current time based on the determined probabilities for each of the plurality of applications, where the information identifies applications in the plurality of applications associated with a probability that is greater than zero.
16. The mobile device of claim 15, wherein the instructions cause:  
determining to launch a particular application based on a data budget, an energy budget, and thermal conditions of the mobile device.
17. The mobile device of claim 14, wherein the application invocation forecast is generated by calculating a probability that an application will be invoked by a user on the mobile device during a window of time.
18. The mobile device of claim 15, wherein determining the probability includes performing time series modeling on the invocation data collected by the first process.
19. The mobile device of claim 15, wherein determining the probability includes analyzing recent, daily and weekly user invocation history to calculate a probability that the user will invoke an application at about the current time.