

EE579 Assignment 5

Location API: Geo Tagged Photos

University of Southern California

Department of Electrical Engineering

EE579 Spring 2008

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Assignment #3 Due: Feb 25th 2008, 4PM

APPLICATION REQUIREMENTS:

In this programming assignment you will have a chance to use Location API (JSR 179) to tag photos using your GPS location. The assignment must be done in **groups of three students**. Students must inform the TA who the group members are by Feb 20th 2008 noon PST. Each group member is expected to fully understand all the pieces of their group's project (particularly the implementation and coding details). The idea behind forming groups for this lab is to allow you find the right partners you can work with cohesively in preparation for the group project.

1. Geo Tagging:

The first part of your assignment requires you to use the JSR 179 Location API to programmatically turn on the GPS and obtain the GPS location of the mobile device in terms of lat/long coordinates. Then using the conversion code provided to you on the blackboard convert the lat/longs to X,Y,Z Mercator projected values as described in the class. Then use the X,Y,Z values to download a map tile from the map tile server. The map tile server can be accessed from this URL:

<http://tripline.nokiapaloalto.com:8080/Tiles/NRCTiles?verNum=579&tileX=5&tileY=12&zoomLevel=5>. Change X,Y,Z values properly in the above URL to download a 256pixelX256pixel PNG image from the tile server. Note that the map tile server can only take Z values up to 15. Hence, even though the mobile device knows the X, Y values up to 25 bits of accuracy you will only ask for the Zoom 15 map tile from the tile server. In other words, you will remove at least 10 bits of X,Y information before sending a request the map tile server. Then use the 25 bit GPS information to pin point your location on the map using a simple icon such as a push pin image shown below.



2. Combining MMAPI and GPS for Geo Tagged Photos

The second part of the assignment combines your Location API knowledge with MMAPI API knowledge to create Geo Tagged Photos. In the first part you create a program that knows how to show your precise location on a map. In the second part of the assignment you will use your MMAPI API knowledge to programmatically take a picture from your

phone. Once the picture is taken you will enable the GPS and read the location information where the picture is taken. Then you will convert the picture into a simple 16pixel X 16 pixel icon by using the MMAP API. Read more about image resizing here: http://developers.sun.com/mobility/reference/techart/design_guidelines/image_resizing.html . Your program will then use the image icon that you programmatically created to be used on the map instead of a push pin to show that the image is taken at a specific location.

MINIMUM REQUIRED FEATURES:

You need to use the Location listener to receive the GPS updates. You need to use the MMAP API and AMMS API to take and resize pictures. You should cache the map images that you downloaded from the maptile server locally on the phone and check the cache before sending request to the tile server.

SUBMISSION / DEMONSTRATION:

Demonstrate your application to TA/grader.

GRADING:

GPS Locator:	50%
Photo Tagging:	50%