

# Collaborative Rephotography

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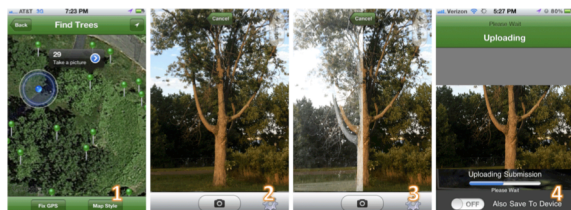
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## 1. Introduction

Rephotography is the process of capturing the same scene at a different time, in order to capture changes. Previous work at SIGGRAPH [BAE2010] demonstrated the ability for smart-phone apps to guide a user to the correct viewpoint, here we promote the use of such tools distributed widely over space and time, by enabling collaborative projects that allow multiple users to re-photograph multiple sites over time. These sites may be architectural, social, urban scenes or ecological. Current projects utilizing our mobile tools range from nation-scale rephotography of scenic overlooks, to monitoring of urban street trees in NYC by local conservancy group volunteers. Rephotography directly connects pictures at one time to pictures at another time. It also connects a photographer at one time to a photographer at another time, by providing a mechanism to collaboratively record the story of how our world changes.

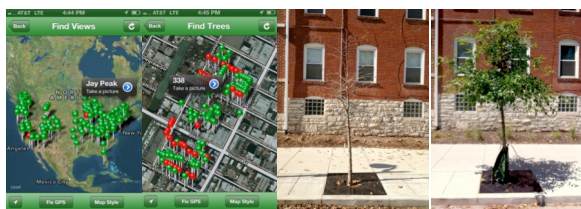
## 2. Design and Workflow

While several rephotography projects exist to document particular locations and changes, a more powerful tool can leverage volunteers on an occasional basis by providing a database of rephoto locations. This led to a user experience that is location based and includes the lowest possible barrier to entry for volunteer users, comprising the following illustrated steps:



(1) choose photo subject from map, then (2) verify the photograph subject, (3) align current picture using transparent overlay, and (4) upload the image.

Collaborative re-photography allows anyone to contribute to projects, facilitating projects that require pictures taken over a temporal or spatial extent that is not possible for a single person.

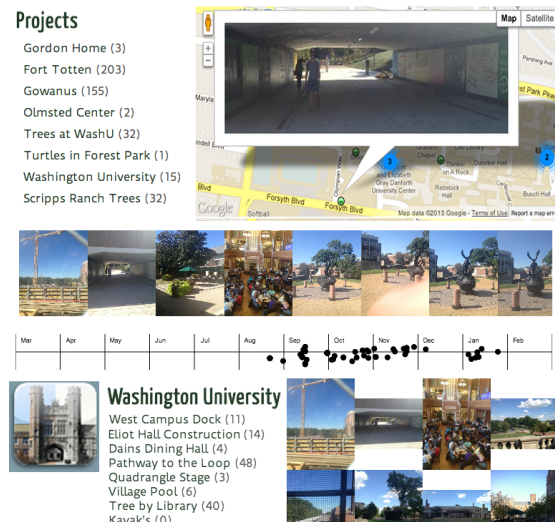


Ongoing projects include national scenic overlooks (1<sup>st</sup> map screenshot, left) and the Gowanus conservancy in NYC (2<sup>nd</sup> map screenshot), where volunteers use rephoto to monitor the health, changes, and local environment of street trees.

New projects can be defined by specifying the GPS locations, if available, and/or initial pictures for each subject, if available. Current projects have spatial scales ranging from national studies of landscape change through re-photography from scenic overlooks, and local monitoring of urban forest health, using volunteers from local tree conservancy groups.

## 3. Visualizing the Collaborative

Collaborative contributions are visualized through a web and mobile interface, showing the map of each project, a timeline of the data submission to the project, and a random montage of recent submissions:



Visit: <http://www.projectrephoto.com/>

## 4. Conclusions

Rephotography is already recognized as a tool to record and quantify changes in the environment, but distributing the ability for any person to define and contribute to projects makes possible applications that require frequent and widespread data contributions. This supports current efforts in citizen science, stewardship, and sustainability. It also promotes a new tool in coordinating efforts for community participation in collecting data documenting changes in social and ecological environments.

## References

BAE S., AGARWALA A., DURAND F.: COMPUTATIONAL REPHOTOGRAPHY. ACM TOG 29, 3 (2010), 24:1–24:15

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