

Extracted from:

Programming Google Glass

The Mirror API

This PDF file contains pages extracted from *Programming Google Glass*, published by the Pragmatic Bookshelf. For more information or to purchase a paperback or PDF copy, please visit <http://www.pragprog.com>.

Note: This extract contains some colored text (particularly in code listing). This is available only in online versions of the books. The printed versions are black and white. Pagination might vary between the online and printed versions; the content is otherwise identical.

Copyright © 2013 The Pragmatic Programmers, LLC.

All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior consent of the publisher.

The Pragmatic Bookshelf

Dallas, Texas • Raleigh, North Carolina

The
Pragmatic
Programmers

Pragmatic
exPress

Programming Google Glass

The Mirror API



Eric Redmond

Edited by Jacquelyn Carter

Programming Google Glass

The Mirror API

Eric Redmond

The Pragmatic Bookshelf

Dallas, Texas • Raleigh, North Carolina



Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. Where those designations appear in this book, and The Pragmatic Programmers, LLC was aware of a trademark claim, the designations have been printed in initial capital letters or in all capitals. The Pragmatic Starter Kit, The Pragmatic Programmer, Pragmatic Programming, Pragmatic Bookshelf, PragProg and the linking *g* device are trademarks of The Pragmatic Programmers, LLC.

Every precaution was taken in the preparation of this book. However, the publisher assumes no responsibility for errors or omissions, or for damages that may result from the use of information (including program listings) contained herein.

Our Pragmatic courses, workshops, and other products can help you and your team create better software and have more fun. For more information, as well as the latest Pragmatic titles, please visit us at <http://pragprog.com>.

The team that produced this book includes:

Jacquelyn Carter (editor)
Candace Cunningham (copyeditor)
David J Kelly (typesetter)
Janet Furlow (producer)
Juliet Benda (rights)
Ellie Callahan (support)

Copyright © 2013 The Pragmatic Programmers, LLC.
All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior consent of the publisher.

Printed in the United States of America.
ISBN-13: 978-1-937785-79-6
Encoded using the finest acid-free high-entropy binary digits.
Book version: P1.0—December 2013

Preface

Google Glass is the new wearable computer that everyone is talking about. Not only does Glass offer a head-mounted optical display and touch interface, but it's also programmable in two ways: by creating native applications using the Glass Development Kit (GDK), and by programming Glassware (Glass applications) using the HTTP-based Mirror API. This book is about the latter.

You'll get a glimpse of what Glass is and what it is not, and how users can interface with Glass. Then you'll learn how to develop a Glass application fast, by using the Mirror API to manipulate timeline cards and menus, track a Glass's geolocation, create rich interactions by responding to user inputs, and capture or serve user images and videos. You'll see how to properly design new Glassware or update existing applications to become Glassware. This is *the* book to read if you want a shortcut to this brave new world.

What's the Big Deal with Glass?

The first future-facing movie that I can recall containing consumer HUD (heads-up display) goggles was *Back to the Future 2*. This HUD was worn in the *future* year 2015 (I know, right?), not by a military commander or an airship pilot, but by young Marty McFly, Jr., as he sat with his family around the kitchen table. This was a consumer device capable of, at least, displaying text and accepting phone calls. Google Glass has beaten that mark by a year.

Although Glass is sometimes wrongly considered to be an augmented-reality device, it's better thought of as an ever-present optical interface for a mobile device. It's a self-contained computer, yes, but it is also reliant on an external paired smartphone for some actions, such as geolocation or continuous Internet access. Internet access is a necessary component for using Glassware with the Mirror API, in the same way that Twitter is usable only if you have online access.

This is a powerful requirement, since it means your Glassware can connect users and allow them to share assets. You can store and retrieve each of your

Glass user's information in the cloud, and easily connect the same data through Glass, smartphones, and the Web.

Is This Book for You?

This book is designed to help experienced developers quickly start writing Google Glass applications with the Mirror API. Although this book covers using the interface with Google's Java Mirror Client code, the Mirror API itself is an HTTP interface with support for many languages. This means that many of the lessons about the Mirror API itself can apply to languages beyond the simple Java client.

The pertinent code is covered in the book, and the rest can be downloaded along with the book (or from GitHub.¹) You needn't be a Java expert to use this book, but it can help to know your way around the syntax and Eclipse editor. You may also get more out of this book if you're familiar with Google App Engine, although you can use any Platform as a Service (PaaS) or host your own Glassware applications.

What's in This Book?

This book is about programming Google Glass by using the Mirror API, but there's more information to know beyond the technicals of one API. We start with an overview of the Glass environment in [Chapter 1, *Wrapping Your Head Around Glass*, on page ?](#). From there we set up our development and deployment environments in [Chapter 2, *The Google App Engine PaaS*, on page ?](#), and follow the OAuth 2.0 steps for [Chapter 3, *Authorizing Your Glassware*, on page ?](#).

The middle of the book digs into the actual Mirror API, starting with [Chapter 4, *Building the Timeline*, on page ?](#), then moving on to [Chapter 5, *Tracking Movement and User Responses*, on page ?](#) and [Chapter 6, *Making Glass Social*, on page ?](#).

We wrap up the book with an eye on design in [Chapter 7, *Designing for Glass*, on page ?](#), and a look at basing Glassware on a web app in [Chapter 8, *Turning a Web App to Glass*, on page ?](#).

This book is intended to be read linearly, from the first to last chapter. It does cover most of the Mirror API, but it's not designed to be a reference book. However, there is a reference in [Appendix 1, *HTTP and HTML Resources*, on page ?](#).

1. <https://github.com/coderoshi/glassmirror>

Online Resources

You can download the code and other resources used in this book from the Pragmatic Bookshelf website or my GitHub repository.^{2 3} You are free to use this source code for anything you wish.

The official Google Mirror API is also an excellent resource for the most up-to-date changes in the API, as well as other viewpoints on creating Glassware.⁴

Getting Going

Wearable computers, like Google Glass, are a growing topic, getting larger by the day. We could have easily created a book twice this length on Glass concepts, the Mirror API, good design, musings on the future, and so on. It was a conscious decision to keep this book slim so you can get a quick head start on this future.

We're beginning an exciting new journey in software development and design. Let's take our first steps into it.

-
2. pragprog.com/book/erpgg/programming-google-glass
 3. <https://github.com/coderoshi/glassmirror>
 4. <http://developers.google.com/glass/>