

Beginning Google Glass Development

Jeff Tang

Apress



Contents

About the Author	xiii
About the Technical Reviewer	xv
Acknowledgments	xvii
Introduction	xix
■ Chapter 1: Getting Started	1
Why Glass	1
What Is Glass and Glassware?	2
What Can Glass Do?	4
What Kinds of Glassware Can You Develop?	6
When to Use Which	8
Google's Glassware Policies	9
Why This Book?	9
Who Is This Book For?	10
For Beginning Android Developers	10
For Intermediate or Advanced Android Developers	10
For iOS Developers	10
For Web Developers	11
For Other Programmers	11
For Nonprogrammers	11

Resources.....	11
Questions and Feedback	12
Summary	12
■Chapter 2: Hello, Glass! Your First GDK App	13
Setting Up the Development Environment	13
System Requirements	13
Android Developer Tools	14
Playing with Glass.....	18
Enabling Debugging Mode on Glass	18
The adb Command.....	19
Installing the USB Driver on Windows	20
Showing the Glass Screen on a Bigger Screen	23
Developing with Simulated Devices or Emulators.....	24
Testing with GDK Samples.....	24
The HelloGlass Glassware	27
Step-by-Step Tutorial.....	27
What's Going On	35
Summary.....	46
■Chapter 3: Glass User Interface.....	47
Overview	47
Glass-Styled Cards	50
Menu.....	51
Live Cards.....	52
Low-Frequency Live Cards	52
High-Frequency Live Cards.....	55
Menu.....	62
Immersion	63
2D Canvas Drawing	63
Gestures and Listeners.....	68
Menu and Head Gesture	70
3D OpenGL ES Drawing	70

When to Use Which	76
Theme and UI Widgets.....	76
Summary.....	79
■Chapter 4: Camera and Image Processing	81
Taking Pictures.....	82
The Easy Way.....	82
The Custom Method.....	82
Photo View.....	95
Barcode Recognition	97
OCR.....	101
Image Web Search	106
OpenCV.....	107
The Complete App	112
Summary.....	112
■Chapter 5: Video: Basics and Applications.....	113
Capturing Video	113
The Quick Way	114
The Custom Way	116
Playing Video	123
OpenCV Video Processing.....	126
FFmpeg Video Processing	131
Test the Library Client on Glass	131
Integrating the FFmpeg Library	133
YouTube Integration.....	137
Calling Data API	137
Displaying Query Result.....	139
Making the Voice Query	143
Playing the Video and Let's Karaoke.....	144
Keeping Code Updated	144
Running the App	145
Summary.....	145

■Chapter 6: Voice and Audio	147
Voice Input.....	147
Sound Effects	149
Audio Capture and Play	154
Using MediaRecorder and MediaPlayer.....	154
Using AudioRecord and AudioTrack	158
Improving the Karaoke App	164
Pitch Detection	165
Touchtone Detection.....	169
Song Identification	171
Summary.....	173
■Chapter 7: Networking, Bluetooth, and Social.....	175
Making HTTP Requests	176
HTTP GET	177
HTTP POST.....	178
HTTP File Uploading.....	180
Socket Programming.....	182
Glass Client vs. Android Server.....	182
Glass Server vs. Android Client.....	189
Glass Client vs. iOS Server	189
Glass Server vs. iOS Client	191
Bluetooth	193
Classic Bluetooth	194
Bluetooth Low Energy.....	204
Other Tips	211
Going Social	211
Summary.....	214

■Chapter 8: Location, Map, and Sensors	215
Location.....	216
Getting Location.....	216
Showing Address.....	219
Showing and Resizing Map	221
Finding Places Nearby	223
Searching Shared Pictures	230
Sensors	231
Supported Sensors	231
Collecting Sensor Data	232
Shake It or Not.....	242
Detecting Metal	243
Developing a Compass	244
Finding the Planets.....	246
Summary.....	247
■Chapter 9: Graphics, Animation, and Games	249
Graphics	250
Canvas Drawing.....	250
Drawable Shapes.....	252
Finger Painting	253
Bitmap Manipulation	256
OpenGL ES Drawing.....	258
Animation	261
Animating Properties in XML and Programmatically	261
Grouping Animation in XML and Programmatically	264
Using Animation Listener.....	265
Game Engines on Glass.....	267
Cocos2d-x 3.0.....	268
libgdx.....	280
AndEngine	287

Developing a Sensor-Based Game	292
Summary	295
■Chapter 10: The Mirror API.....	297
Setting Up Your Environment.....	297
Using PHP	298
Using Java	301
The Mirror API.....	307
Overview	308
Timeline and Static Cards	309
Contacts.....	323
Subscriptions.....	326
Locations	326
Image Processing: The Mirror API Way	327
Creating and Testing a New Mirror App in Java	329
The NBA Roster App	330
Enterprise Apps	335
Design Principles.....	335
Summary	336
Before Moving On.....	336
Index.....	337