



Augmented Reality for Android Application Development

By *Jens Grubert, Dr. Raphael Grasset*



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As an Android developer, including Augmented Reality (AR) in your mobile apps could be a profitable new string to your bow. This tutorial takes you through every aspect of AR for Android with lots of hands-on exercises.

Overview

- Understand the main concepts and architectural components of an AR application
- Step-by-step learning through hands-on programming combined with a background of important mathematical concepts
- Efficiently and robustly implement some of the main functional AR aspects

In Detail

Augmented Reality offers the magical effect of blending the physical world with the virtual world, which brings applications from your screen into your hands. AR redefines advertising and gaming, as well as education. It will soon become a technology that will have to be mastered as a necessity by mobile application developers.

Augmented Reality for Android Application Development enables you to implement sensor-based and computer vision-based AR applications on Android devices. You will learn about the theoretical foundations and practical details of implemented AR applications, and you will be provided with hands-on examples that will enable you to quickly develop and deploy novel AR applications on your own.

Augmented Reality for Android Application Development will help you learn the basics of developing mobile AR browsers, how to integrate and animate 3D objects easily with the JMonkeyEngine, how to unleash the power of computer vision-based AR using the Vuforia AR SDK, and will teach you about popular interaction metaphors. You will get comprehensive knowledge of how to implement a wide variety of AR apps using hands-on examples.

This book will make you aware of how to use the AR engine, Android layout, and overlays, and how to use ARToolkit. Finally, you will be able to apply this knowledge to make a stunning AR application.

What you will learn from this book

- Decide which AR approach is right for you: sensor-based or computer vision-based
- Get camera-access for Android
- Overlay 3D objects on physical images with the JMonkeyEngine
- Learn how to use the GPS sensor to locate yourself in the world
- Master orientation sensors
- Learn the building blocks of implementing Augmented Reality Browsers
- Understand the power of the Vuforia SDK for computer vision-based AR
- Enable user interaction with Augmented Objects

Approach

A step-by-step tutorial-based guide aimed at giving you hands-on practical experience to develop AR applications for Android.

Who this book is written for

Augmented Reality for Android Application Development is for Android mobile application developers who are familiar with Android Development Tools and deployment, JMonkeyEngine, and the Vuforia SDK.

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Bibliography

- Sales Rank: #1637263 in Books
- Published on: 2013-11-25
- Released on: 2013-11-25
- Original language: English
- Number of items: 1
- Dimensions: 9.25" h x .31" w x 7.50" l, .54 pounds
- Binding: Paperback
- 134 pages



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Editorial Review

About the Author

Jens Grubert

Jens Grubert is a researcher at the Graz University of Technology. He has received his Bakkalaureus (2008) and Dipl.-Ing. with distinction (2009) at Otto-von-Guericke University Magdeburg, Germany. As a research manager at Fraunhofer Institute for Factory Operation and Automation IFF, Germany, he conducted evaluations of industrial Augmented Reality systems until August 2010. He has been involved in several academic and industrial projects over the past years and is the author of more than 20 international publications. His current research interests include mobile interfaces for situated media and user evaluations for consumer-oriented Augmented Reality interfaces in public spaces. He has over four years of experience in developing mobile Augmented Reality applications. He initiated the development of a natural feature tracking system that is now commercially used for creating Augmented Reality campaigns. Furthermore, he is teaching university courses about Distributed Systems, Computer Graphics, Virtual Reality, and Augmented Reality.

Website: www.jensgrubert.com.

Dr. Raphael Grasset

Dr. Raphael Grasset is a senior researcher at the Institute for Computer Graphics and Vision. He was previously a senior researcher at the HIT Lab NZ and completed his Ph.D. in 2004. His main research interests include 3D interaction, computer-human interaction, augmented reality, mixed reality, visualization, and CSCW. His work is highly multidisciplinary; he has been involved in a large number of academic and industrial projects over the last decade. He is the author of more than 50 international publications, was previously a lecturer on Augmented Reality, and has supervised more than 50 students. He has more than 10 years of experience in Augmented Reality (AR) for a broad range of platforms (desktop, mobile, and the Web) and programming languages (C++, Python, and Java). He has contributed to the development of AR software libraries (ARToolKit, osgART, and Android AR), AR plugins (Esperient Creator and Google Sketchup), and has been involved in the development of numerous AR applications.

Website: www.rafaelgrasset.net.

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