Kinect Open Source Programming Secrets (KOPS) is the **only book that explains the official Java wrappers for OpenNI and NITE**.

The main drawback of using the PrimeSense Java wrappers is their lack of documentation. As I explain in chapter 1, I had to decompile the libraries' JAR files, and work out the correspondences between the Java source and the somewhat better documented C++ OpenNI/NITE APIs. This is why including "secrets" in the book's title isn't too excessive :).

This book **covers programming topics not found elsewhere**. I start off with the basics, with chapters on depth, infrared, and RGB imaging, point clouds, skeletal user tracking, hand tracking, and gesture support. Moving beyond that, I look at several novel and unusual features, including:

- Kinect gaming based around a version of the classic Breakout video game.
- Controls for the Kinect motor, LED, and accelerometer, which aren't part of the standard OpenNI API. In fact, their absence is often held up as a serious drawback of the API. It's actually quite easy to add these capabilities using a custom-built USB driver.
- 3D graphics programming in the point cloud and skeletal tracking examples, using Java 3D.
- A computer vision chapter which explains how to link the Kinect to the popular (and powerful) OpenCV library.
- The creation of new body gestures (inspired by the FAAST system), which aren't part of the limited NITE repertoire.
- A new type of GUI component controlled by hand gesturing (which I call a GGUI), illustrated with three examples - a button, dial, and slider - all controlled without the help of mouse or keyboard

Early (sometimes *very* early) draft versions of KOPS's chapters can be downloaded from here (see the links below). All the book's code is here, downloadable on a chapter-by-chapter basis from each chapter's page, or as a single zip file (576 KB). I'll also be adding *new* chapters here; chapters which don't appear in the book.

If you're looking for *Killer Game Programming in Java* then it's here.

What this Book is Not About

I'm concentrating on the Kinect without including chapters explaining OOP concepts such as classes, objects, and inheritance. This is not a book for first-time Java programmers.

More importantly, I don't have the space to seriously explain the topics of 3D graphics or computer vision. I introduce them (in the form of Java 3D and JavaCV) in enough detail so that you can understand my examples, but there are worlds of material which I don't mention. When I get to these topics, I'll suggest books and websites where you can find more information.

Installation Information

- An Installation Checklist for OpenNI/NITE on Windows (which include the Java wrappers).
- A very nice installation guide for Mac OS X.
- Two installation guides for Ubuntu (a great Linux distro): here and here.

Chapters

Last updated 27th September 2012:
Added Chapter 2.1. on charting the depth map.

- **All the code** from the book as a single zip file (576 KB).
  This doesn't include extra chapters, such as chapter 14, which don't appear in the book.
- Powerpoint slides from JavaOne 2012 (14.1 **MB**).
  These don't include the demo videos I used during the talk, otherwise the file size would go up to 1.4 GB!!. I included examples on finger detection, augmented reality, and emperor tracking, which aren't on this website yet, but will be added as soon as I have time.

  If you want to see a **VIDEO** of my talk, which includes all the demos, along with my dulcet voice commentary, then visit the JavaOne 2012 technical session, *CON3400 - Kinect Open Source Programming Secrets: Hacking with OpenNI, NITE, and Java*. Click the link in the "Media" section in the right-hand sidebar.

- Chapters 1 & 2. Kinect Imaging
- Chapter 2.1. Charting the Depth Map (**New**)
  This chapter does **not** appear in the book.
- Chapter 2.3. Changing the Background
  This chapter does **not** appear in the book.

- Chapter 2.4. Kinect Snow
  This chapter does **not** appear in the book.
- Chapter 2.5. Transforming the User This chapter does **not** appear in the book.
- Chapter 3. A Point Cloud for Depths
- Chapter 4. Tracking Users in 2D
- Chapter 5. Viewing Users in 3D
- Chapter 6. The Tilt Motor, LED, and Accelerometer
- Chapter 7. NITE Hand Gestures
- Chapter 8. NITE Hands Tracker
- Chapter 9. Kinect Breakout
- Chapter 10. Gesture GUIs
- Chapter 11. Kinect Capture
- Chapter 12. Motion Detection Using OpenCV
- Chapter 13. FAAST-style Body Gestures
- Chapter 14. Speech Recognition
  This chapter does **not** appear in the book.
- Chapter 15. Using the Kinect's Microphone Array
  This chapter does **not** appear in the book.

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