

Community Experience Distilled

PySide GUI Application Development

Develop more dynamic and robust GUI applications using an open source cross-platform UI framework

Venkateshwaran Loganathan



PySide GUI Application Development

Develop more dynamic and robust GUI applications using an open source cross-platform UI framework

Venkateshwaran Loganathan



BIRMINGHAM - MUMBAI

PySide GUI Application Development

Copyright © 2013 Packt Publishing

All rights reserved. No part of this book may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, without the prior written permission of the publisher, except in the case of brief quotations embedded in critical articles or reviews.

Every effort has been made in the preparation of this book to ensure the accuracy of the information presented. However, the information contained in this book is sold without warranty, either express or implied. Neither the author, nor Packt Publishing, and its dealers and distributors will be held liable for any damages caused or alleged to be caused directly or indirectly by this book.

Packt Publishing has endeavored to provide trademark information about all of the companies and products mentioned in this book by the appropriate use of capitals. However, Packt Publishing cannot guarantee the accuracy of this information.

First published: October 2013

Production Reference: 1081013

Published by Packt Publishing Ltd. Livery Place 35 Livery Street Birmingham B3 2PB, UK.

ISBN 978-1-84969-959-4

www.packtpub.com

Cover Image by Harish Chandramohan (harriskicks@gmail.com)

Credits

Author Venkateshwaran Loganathan

Reviewers Oscar Campos Jibo He

Acquisition Editor Pramila Balan

Commissioning Editor Neil Alexander

Technical Editors

Dipika Gaonkar Mrunmayee Patil Project Coordinator Amigya Khurana

Proofreader Hardip Sidhu

Indexer Tejal Soni

Graphics Ronak Dhruv

Production Coordinator Nilesh R. Mohite

Cover Work Nilesh R. Mohite

About the Author

Venkateshwaran Loganathan is an eminent software developer who has been involved in the design, development, and testing of software products for more than five years. He was introduced to computer programming at the age of 11 with FoxPro and then started to learn and master various computer languages like C, C++, Perl, Python, node.js, and Unix shell scripting. Fascinated by open source development, he has contributed to various open source technologies. He is now working for Cognizant Technology Solutions as an Associate in Technology, where he has involved himself in research and development for Internet of Things domain. He is now actively involved in using RFID devices for evolving the Future of Technology concepts. Before joining Cognizant, he worked at Infosys, Virtusa, and NuVeda. Starting his career as a Network Developer, he has gained expertise in various domains like Networking, e-learning, and HealthCare. He has won various awards and accolades for his work.

He holds a bachelor's degree in Computer Science and Engineering from Anna University and currently pursuing M.S in software systems from BITS, Pilani. Apart from programming, he is actively involved in handling various technical and soft skills classes for the budding engineers and college students. His hobbies are singing and trekking. He likes to get involved with social media. Visit him online at http://www.venkateshwaranloganathan.com and write to him at anandvenkat4@gmail.com. I am indebted to many. First of all, I would like to thank my mother Anbuselvi and grandmother Saraswathi for their endless effort and perseverance in bringing me up to this level. I am thankful to the entire team of Packt, for accepting my proposal in bringing out a book of this kind. I would like to specially mention Meeta, Neil, and Amigya for their valuable guidance throughout the writing of the manuscript. I would also like to thank Dipika and Mrunmayee for the efforts they have put in to technically edit the book. I am very grateful to my technical reviewers, Oscar Campos and Jibo He for reviewing the manuscript and providing me constructive feedback in helping me shape the content. I would also like to extend my sincere gratitude to my professors, Senthil Kumar and Radhika for guiding me and encouraging me in all my spheres of life. I would also like to thank my sister Kamala and my aunt Kalavathi for all the hope and love they have towards me. I would also like to thank all my friends and brothers as their list is too long to mention here. They all have been my well-wishers and been helping me in my tough times. I have missed many people here, but my thanks are always due for them who directly or indirectly influenced my life.

Above all, thanks to The Almighty for the showers of blessings on me.

About the Reviewers

Oscar Campos is a senior Python developer in Dublin, Ireland. He has great experience working with Python and many free software projects and contributions as well. He is the author of *SublimePySide the Sublime Text plugin to work with PySide*. You can take a look at his free software projects on his Github site on https://github.com/DamnWidget. He works for for Dedsert Ltd. an online gambling startup company located in south Dublin.

I want to thank my wife Lydia for encouraging me to do this technical review

Dr. Jibo He is an avid developer using Python, PySide, and Qt. He has over seven years' experience using Python for his scientific research and entrepreneur careers. He has used PySide to develop important usability and search engine optimization software for the company UESEO LLC. He is honored to be the reviewer of this book, and expects more developers using PySide. He has also worked on PsychoPy/Python for Social Scientists and MATLAB for Social Scientists.

www.PacktPub.com

Support files, e-books, discount offers, and more

You might want to visit www.PacktPub.com for support files and downloads related to your book.

Did you know that Packt offers e-book versions of every book published, with PDF and ePub files available? You can upgrade to the e-book version at www.PacktPub.com and as a print book customer, you are entitled to a discount on the e-book copy. Get in touch with us at service@packtpub.com for more details.

At www.PacktPub.com, you can also read a collection of free technical articles, sign up for a range of free newsletters and receive exclusive discounts and offers on Packt books and e-books.



http://PacktLib.PacktPub.com

Do you need instant solutions to your IT questions? PacktLib is Packt's online digital book library. Here, you can access, read and search across Packt's entire library of books.

Why Subscribe?

- Fully searchable across every book published by Packt
- Copy and paste, print and bookmark content
- On demand and accessible via web browser

Free Access for Packt account holders

If you have an account with Packt at www.PacktPub.com, you can use this to access PacktLib today and view nine entirely free books. Simply use your login credentials for immediate access.

Table of Contents

Preface	1
Chapter 1: Getting Started with PySide	5
About Python	5
What is PySide?	6
Hello GUI	6
Setting up PySide	7
Installation	7
Windows	8
Mac OS X	8 8
Linux Building BySido	° 9
Building PySide Windows	9
Linux	9 10
Prerequisites	10
Building PySide	11
Mac OS X	12
Importing PySide objects	12
My first PySide application	13
Exception handling as a practice	15
Summary	18
Chapter 2: Entering through Windows	19
Creating a simple window	19
Creating the application icon	22
Showing a tooltip	26
Adding a button	28
Centering the Window on the screen	30
About box	30
Timers	32

Table of Contents

Windows style	35
Summary	36
Chapter 3: Main Windows and Layout Management	37
Creating the main window	38
Status bar	39
Menu bar	43
The central widget	43
Adding a menu bar	44
Adding menus	45
Tool bar	48
Layout management	49
Absolute positioning	49
Layout containers	50
QBoxLayout	51
QHBoxLayout	52
QVBoxLayout	52
QGridLayout	53
QFormLayout	54
QStackedLayout	54
SDI and MDI	55
A simple text editor	55
Summary	60
Chapter 4: Events and Signals	61
Event management	61
Event loop	62
Event processing	63
Reimplementing event handlers	63
Installing event filters Reimplementing the notify() function	66 67
Signals and slots	67
Drag-and-drop	71
Drawing	74
Graphics and effects	77
Summary	79
Chapter 5: Dialogs and Widgets	81
Built-in dialogs	81
QFileDialog	82
QInputDialog	85
QColorDialog	87
QPrintDialog	89
Custom dialogs	89
[ii]	

	Table of Contents
Widgets at a glance	91
Basic widgets	92
Advanced widgets	94
Organizer widgets	95
Custom widgets	96
Implementation of MDI	98
Summary	100
Chapter 6: Handling Databases	101
Connecting to the database	101
Executing SQL queries	103
Executing a query	103
Inserting, updating, and deleting records	104
Navigating records	105
Transactions	106
Table and form views	107
QSqlQueryModel	107
QSqlTableModel	107
QSqlRelationalTableModel	108
Table view	108
Form view	111
Viewing relations in table views	114
Summary	115
Appendix: Resources	117
The PySide documentation wiki page	117
API reference manuals	117
Tutorials	117
Community support	118
Index	119

Preface

The aim of this book is to introduce you to developing GUI applications in an easy way. Python is easy to learn and use and its programs are relatively shorter than those written in any other programming languages like C++, Java. It is supported by a large set of dynamic libraries and bindings that make it efficient to develop very complex applications in an efficient manner. This book will introduce you to user interface programming and its components. You will be able to develop real time applications in a shorter time after reading this book.

What this book covers

Chapter 1, Getting Started with PySide, introduces you to GUI programming in general. This chapter takes you through the introduction of PySide and its installation in various major operating systems followed by a short introduction to exception handling in programming. By the end of this chapter, users will know how to install and use PySide to create GUI applications in Python.

Chapter 2, Entering through Windows, introduces you with all the GUI programming that revolves around Windows. This chapter explains the basic methods of creating Windows and adding some functions to it. By the end of this chapter, users familiar in creating Windows and modify it accordingly.

Chapter 3, Main Windows and Layout Management, extends the previous chapter by explaining how to create menus and tool bars for a windowed application. This also explains the layout management policies. A simple text editor is given as an example at the end of the chapter. By the end of this chapter, readers have an experience of creating a real time application in PySide.

Chapter 4, Events and Signals, this chapter goes on explaining the signals, various text and graphic effects, drag-and-drop, and few geometrical diagram shapes. By the end of this chapter, readers will learn about managing events and various other text and graphical effects.