

Introduction and Course Overview

PyQGIS Masterclass - Customizing QGIS with Python

Ujaval Gandhi
ujaval@spatialthoughts.com



Introduction

- Background in GIS and Remote Sensing
 - Intern at Indian Institute of Remote Sensing (IIRS), Dehradun, India
 - MS in Geospatial Information Engineering from University of Wisconsin - Madison, USA
- 15 years of professional experience
 - One of the early employees at Google Inc.
 - Moved to India in 2006 and established the maps team
 - Led the GIS and Aerial Imagery team in India from 2007-2019
 - Developed expertise in Google Earth Engine and trained 1000+ scientists and researchers across India
- Presently
 - Creating free and open learning resources
 - spatialthoughts.com/resources
 - qgistutorials.com
 - Providing QGIS/Open-source GIS training through Spatial Thoughts



Ujaval Gandhi

Introduction

- Masters in Remote Sensing
- Interest in Automating Workflows
- Training Associate
 - Class logistics
 - Project support



Vigna Purohit









My PyQGIS Journey

- [2005] First encounter with Python. Bulk processing aerial imagery with GDAL
- [2010] Developing small plugins and scripts in QGIS for automation
- [2013] Launched Google Maps Engine python plugin for QGIS [[video](#)]
- [2015] PyQGIS tutorials at qgistutorials.com
- [2019] [Blog posts](#) focusing on Processing Scripts and Algorithms
- [2021] PyQGIS + Google Earth Engine [[JalTol plugin](#)]
- [2023] [QGIS Actions](#) course

Where can you use Python in QGIS?

- Issue commands from Python Console
- Automatically run python code when QGIS starts
- Write custom functions
- Write custom actions
- Run processing algorithms
- Run QGIS in headless mode for data processing
- Create new processing algorithms
- Create plugins
- Create custom standalone applications

Where can you use Python in QGIS?

-  Issue commands from Python Console
-  Automatically run python code when QGIS starts
-  Write custom functions [[tutorial](#)]
-  Write custom actions
-  Run processing algorithms
-  Run QGIS in headless mode for data processing
-  Create new processing algorithms
-  Create plugins
-  Create custom standalone applications [[github](#)]

Course Overview - Week 1

Day 1 Learning PyQGIS	Day 2 PyQGIS Scripting
PyQt and PyQGIS [Hands-on] Classes and Objects [Lecture] <u>Break</u> QGIS Interface and Project API [Hands-on]	Running Python Scripts on Startup [Hands-on] <u>Break</u> Running Processing Algorithms [Hands-on] Writing Python Console Scripts [Hands-on]

Course Overview - Week 2

Day 1 Plugins	Day 2 Actions
Plugin Basics [Hands-on] <u>Break</u> Processing API and Processing Plugins [Hands-on]	QGIS Actions [Hands-on] <u>Break</u> Writing Standalone PyQGIS Scripts [Hands-on] Q & A

Assignment and Evaluation

Session 1 Session 2	Assignment	Session 3 Session 4
Class Exercises Live Quizzes	Coding Assignment (1 hour)	Class Exercises Live Quizzes

** Assignment is due on the last day of the course*

Course Structure

- The live-sessions are a mix of lectures + hands-on exercises.
- We will have 1 break of 10-minutes each during the 3-hour session.
- The sessions are highly interactive. You are encouraged to ask questions at any point.
 - Don't hold back. Ask clarifications early!

Course Structure

- Each section starts with a brief explanation of the concepts, followed by a hands-on exercise.
- Participants are presented with a challenge at the end of each section.
- All participants must attempt the challenge and submit the solution.
 - Copy/Paste the code via Zoom chat

QGIS Development Schedule

Version Numbering

- Even version numbers (2.18, 3.2 etc) are release versions.
- Odd version numbers (2.99, 3.1 etc) are development versions.

A new release will happen every four months. [[View Roadmap](#)]

- 3 months of development, 1 month of testing

Every third release is a long-term-release (LTR) that is maintained until the next long-term-release occurs.

- Current LTR is 3.28. It will be the LTR till February 2024
- 3.34 will be the next LTR.

QGIS Certification Program

- Designed to promote quality education for QGIS software
- Certifying organizations are reviewed and vetted by the community and the Project Steering Committee (PSC)
- Currently [30 certifying organizations](#) globally
- Certifying organizations can issue official certificates on behalf of QGIS.org
- Certification cost is €20/certificate and this revenue funds QGIS development/bug fixes

Certification

- Certificate will be issued by QGIS.org and given to all participants at the end of the course.
- To receive the certificate, participants must
 - Attend the full course live (both sessions)
 - Complete all the class exercises
 - Complete the class assignment



Let's Get Started