



# GIS Application Development: Data Acquisition

# Instructor



พี่เบญ

Davida Klangreungrong

Managing Director

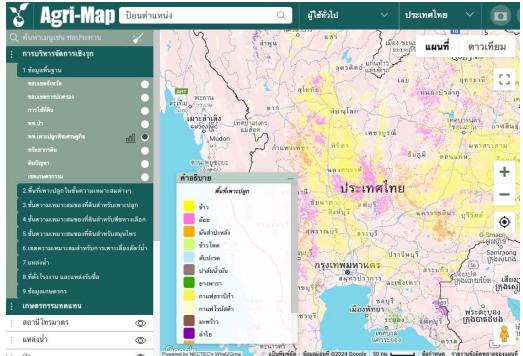


พี่วอน

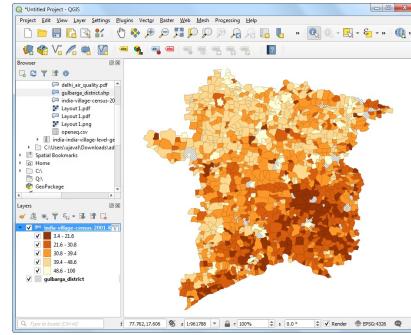
Thantham Khamyai

GIS Expert

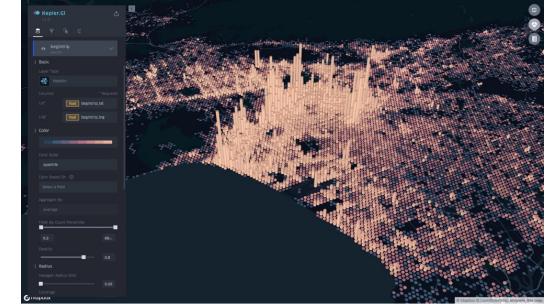
# Course journey



GIS Apps



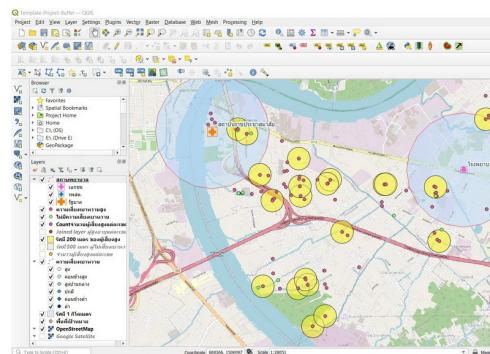
Map visual



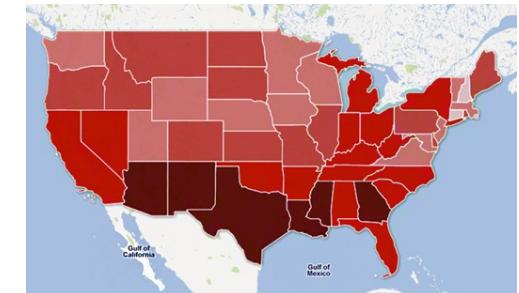
Advanced Map visual



Github



Spatial analysis



Web Map App

# Know this better than know nothing...



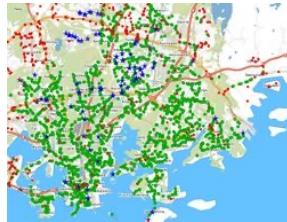
1800s  
John snow



~2,000 BC  
Babylonian clay tablet



1972  
US Landsat Launch



1990s  
Web-Map

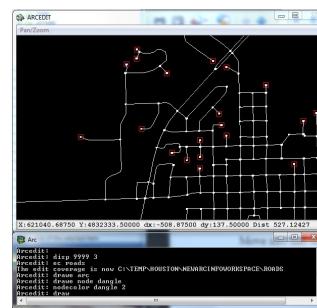
GIS : Stone-Space-AI



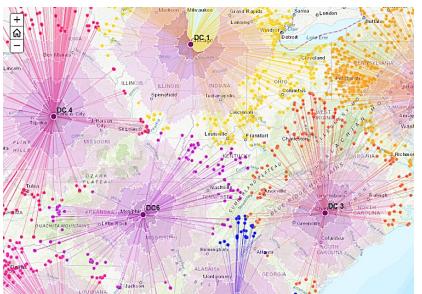
1963  
CGIS, Agri-land agency



2010s  
Mobiles and sensors



1980s  
ESRI software



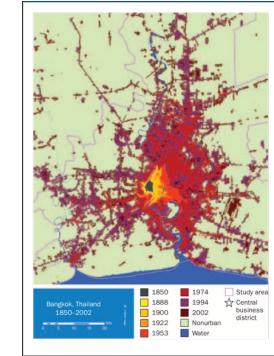
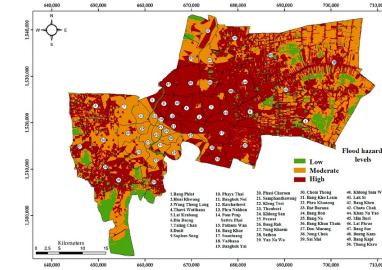
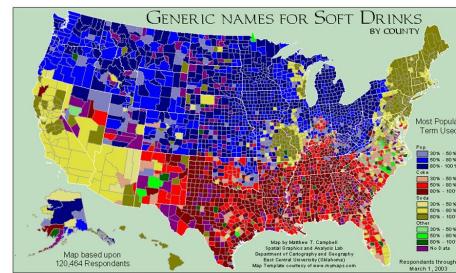
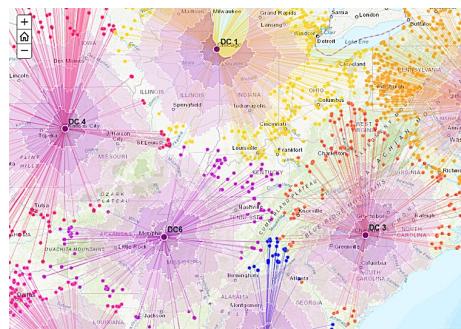
2020s  
Spatial-AI Modeling



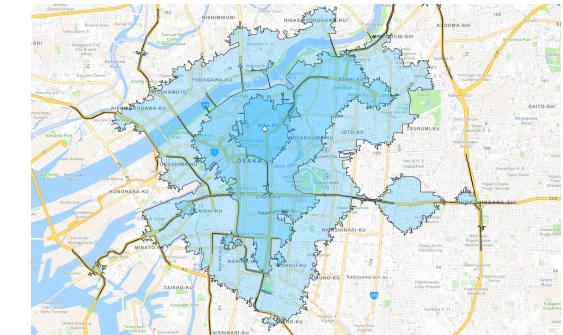
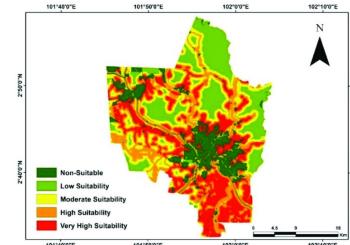
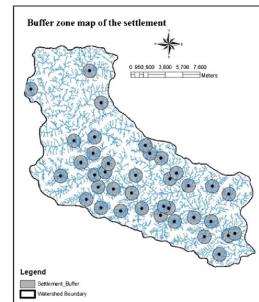
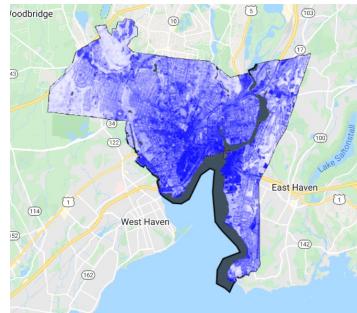
Present  
Simulation, Digital twin,  
Green Tech., Edge-computing

# Geospatial Economics

## Spatial econometrics



## Location-based analysis



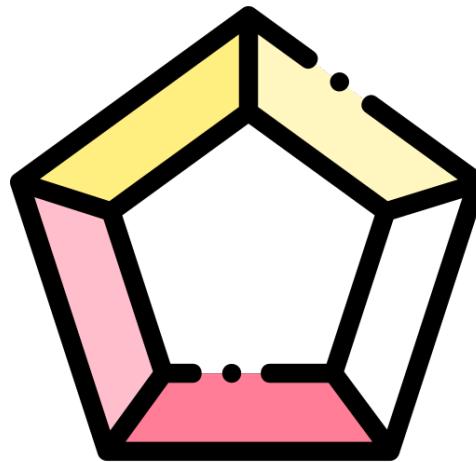
## Applications

# Why GIS in career?

Data Visualization and *Storytelling*

Spatial *Decision-Making* and Analysis

*Policy* and Regional Planning Support



Market and *Consumer* Insights

*Logistics* and Supply Chain Optimization

# Newsday GIS Application

The figure shows a map of Thailand with red shaded regions indicating flood risk. A legend on the left side of the map provides information about the flood risk levels:

- Low Risk (Green): 0.00 - 0.05
- Medium Risk (Yellow): 0.06 - 0.10
- High Risk (Red): 0.11 - 0.25
- Very High Risk (Dark Red): 0.26 - 0.30
- Extremely High Risk (Dark Green): 0.31 - 0.35

Below the map, there are several cards with specific data points:

- พื้นที่ที่ต้องการทราบข้อมูล (R1)**: ผู้ที่ได้รับอันตรายที่สูงที่สุด จำนวน 2.25 ล้านคน
- ผู้ที่ได้รับผลกระทบมากที่สุด (L1)**: ผู้ที่ได้รับผลกระทบมากที่สุด จำนวน 3.2 แสนคน
- ผู้ที่ต้องการทราบข้อมูลทั้งหมด (R2)**: ผู้ที่ต้องการทราบข้อมูลทั้งหมด จำนวน 5 ล้านคน

Search bar: สำนักงานตรวจเงินแผ่นดิน

Rating: ★ Rating

Hours: ⏳ Hours

Filters: All filters

Search area: Search this area

Results (1)

**สำนักงานตรวจเงินแผ่นดินจังหวัดปทุมธานี**

4.4 ★★★★★ (5)  
ถนนรามคำแหง - ถ. 2GCM+FJ6, Thanon Tad Bomrong  
Open Closes 4:30PM - 02 581 5847

**Office of the Auditor General**

4.3 ★★★★★ (41)  
ถนนรามคำแหง - ถ. QGJP+5F4, Rama VI Rd  
Open Closes 4:30PM

**State Audit Office of the Kingdom of Thailand Region 1**

4.5 ★★★★★ (4)  
ถนนรามคำแหง 17/8  
Open Closes 4:30PM - 035 241 163

Directions

Website

Directions

Website

Directions

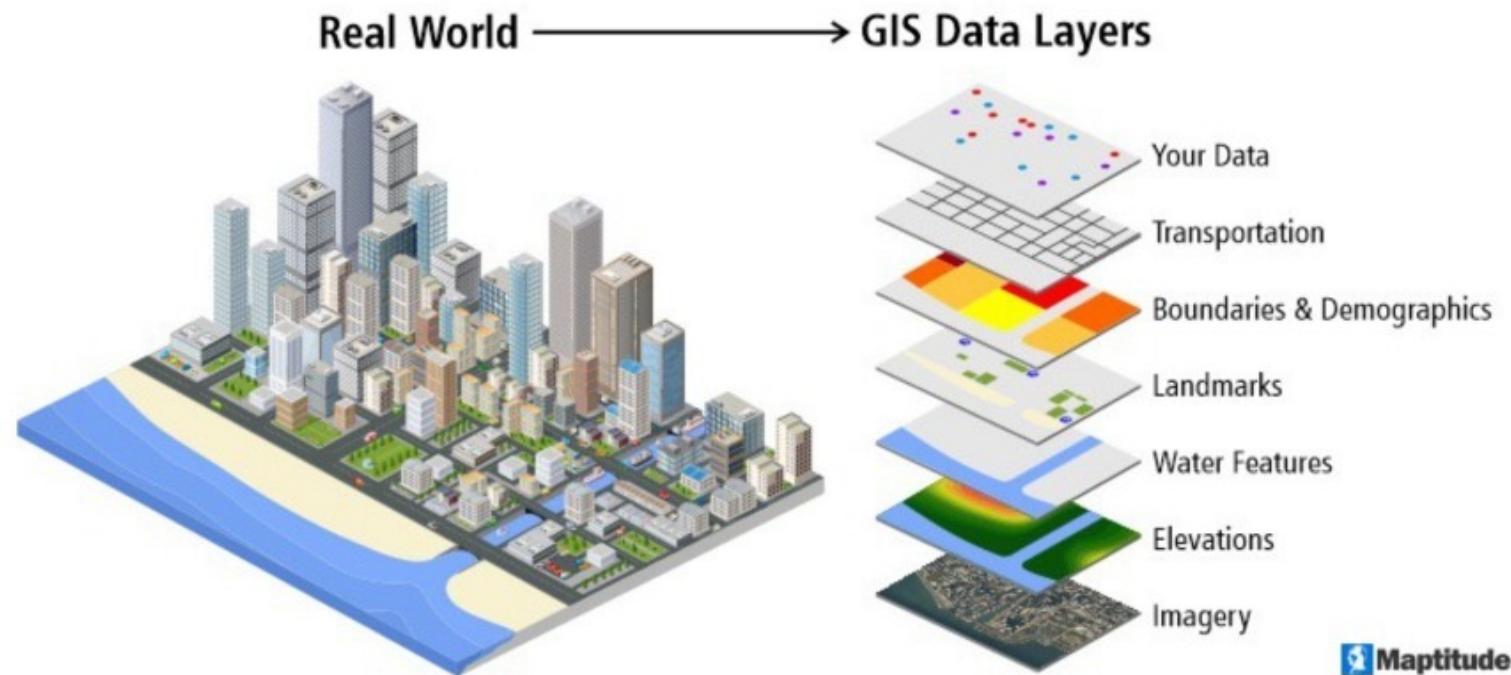
Layers

The map displays an aerial view of a residential area in Bangkok. Key landmarks labeled include 'BURIWATTHANA VILLAGE' and 'TOWNHOUSE RATCHAKRUE'. The map also shows several roads and intersections, with one road labeled 'Rama VI Rd'. The locations of the three government offices mentioned in the search results are marked with red dots on the map.

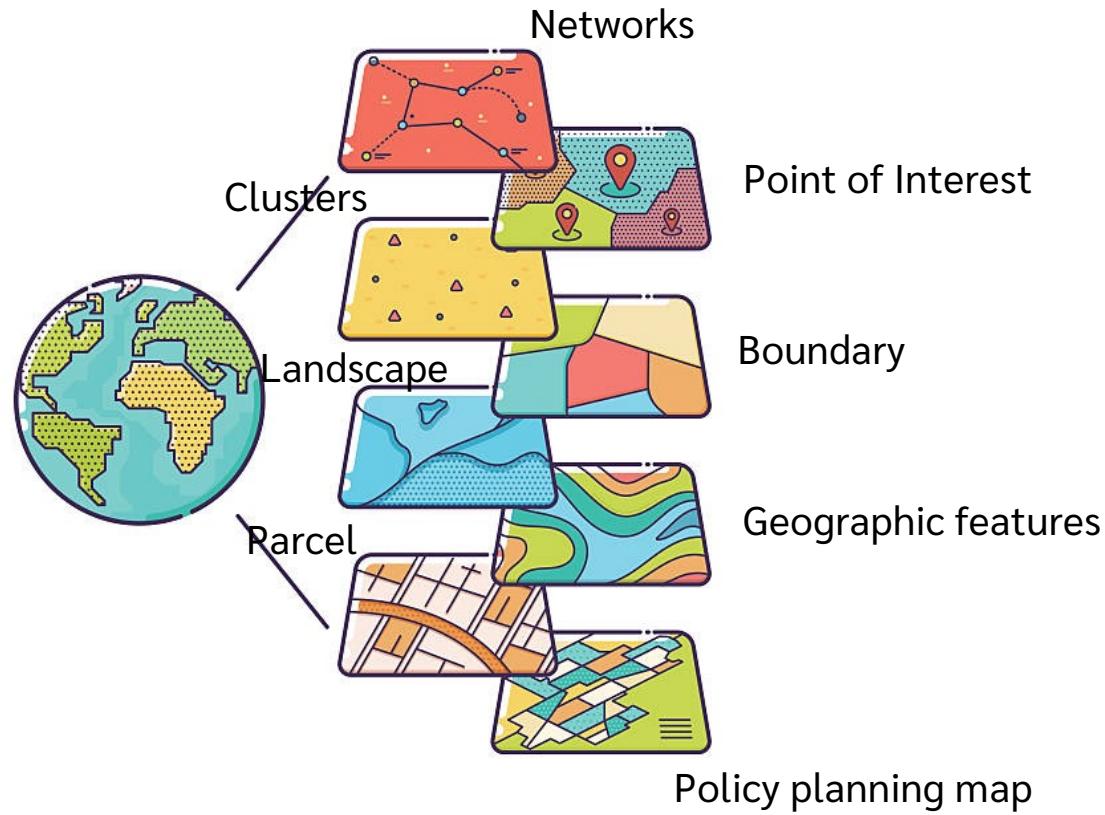
ลำดับ	ชื่อแม่น้ำ	สถานะ	ระดับน้ำ
1	แม่น้ำเจ้าพระยา	ปกติ	0.8 m
2	แม่น้ำป่าสัก	ปกติ	0.5 m
3	แม่น้ำแม่กลอง	ปกติ	0.3 m
4	แม่น้ำท่าจีน	ปกติ	0.2 m
5	แม่น้ำป่าสัก	ปกติ	0.1 m
6	แม่น้ำแม่กลอง	ปกติ	0.05 m
7	แม่น้ำท่าจีน	ปกติ	0.02 m

A satellite map of Bangkok, Thailand, centered on the Ministry of Finance. The map shows a grid of streets and buildings. Several landmarks are labeled: Vichaiyut Hospital (North Building) with a blue square icon; Phum Wattana 4 Alley; Ministry of Finance with a red circle icon; NANA Coffee Roaster Art; Sook Jai Villa; Hanazen; Kopin b Prime L Art; and Sems Gallery International. A red circle highlights the location of the Ministry of Finance. The map also features a legend in the top right corner with icons for location, zoom, and orientation.

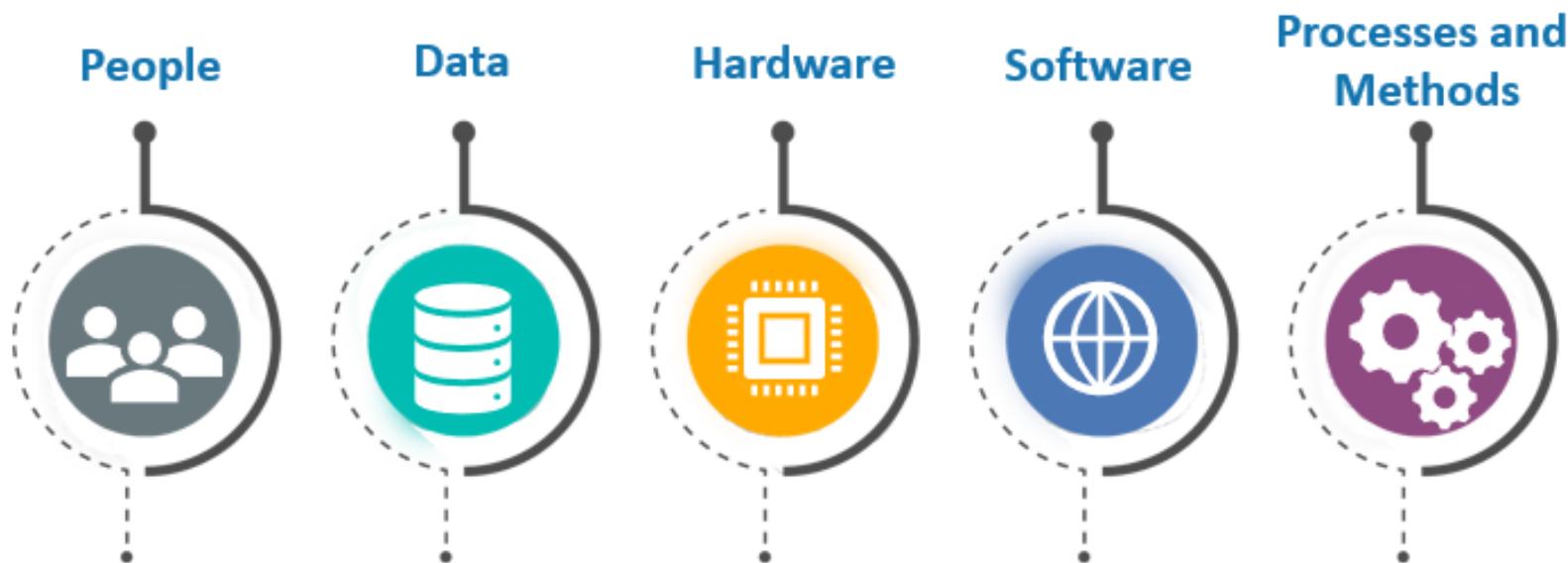
# Geographic view from above



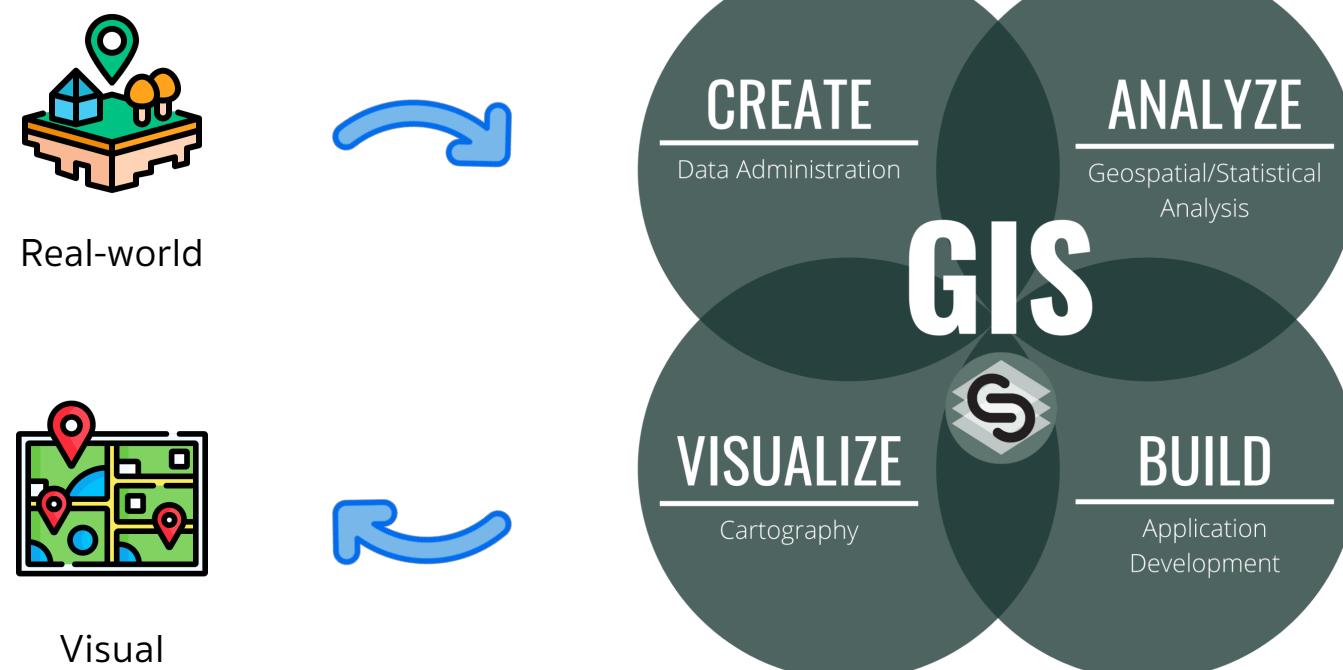
# World's layers in a nutshell



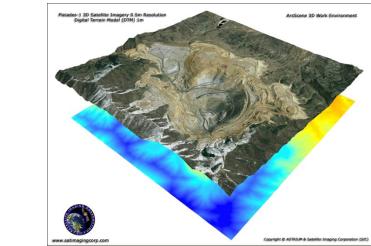
# GIS Components



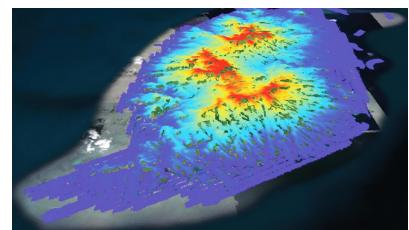
# End-to-End GIS Application



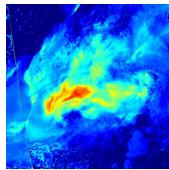
# GIS data format



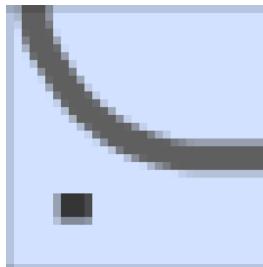
tif



jpg



img



jpg2

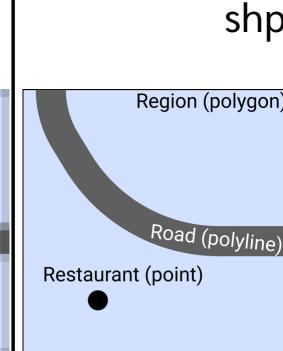
h5

hdf

grd

Raster

geojson



shp

gpkg

gpx

kml

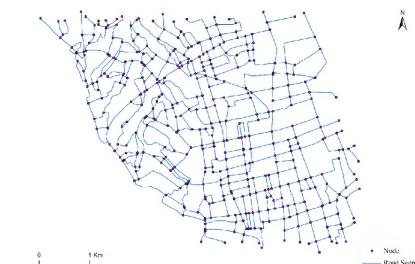
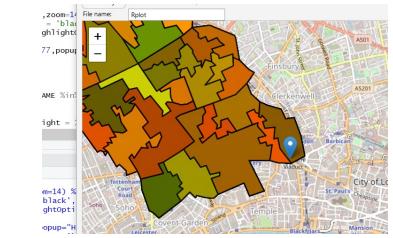
json

kmz

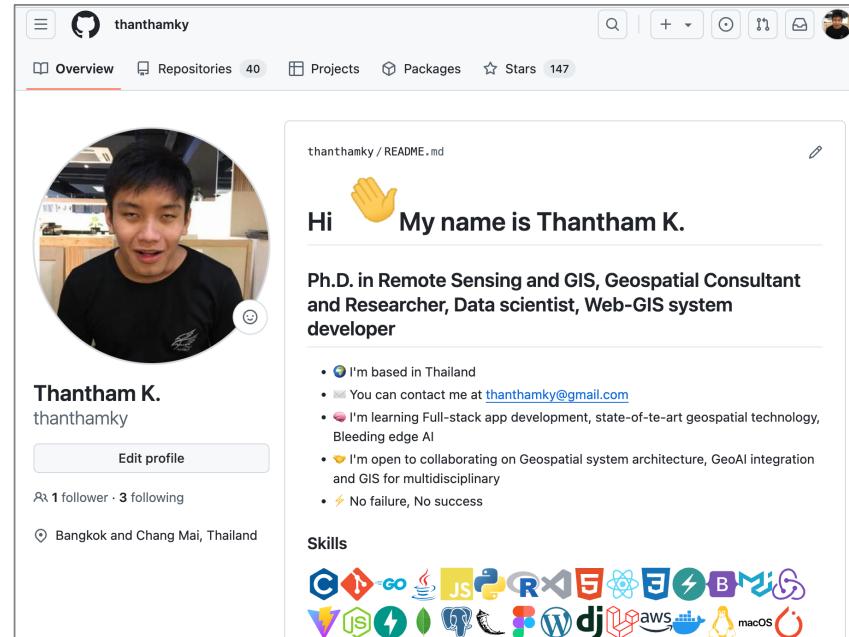
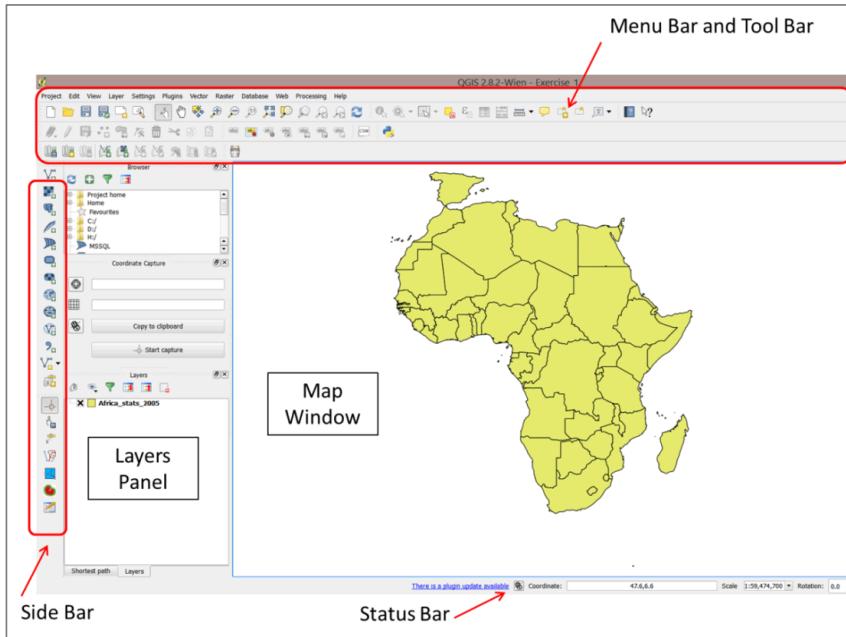
gpkg

gdb

Vector



# Today hands on



Play with GIS Data

Github

# Data source

**DIVA-GIS**  
DATA

« Documentation :: Cont

**Data**

Select and download free geographic (GIS) data for any country in the world<br>

Country  
-- select a country --

Subject  
-- select a subject --

Format  
"grd" (for DIVA-GIS) ✓

<https://diva-gis.org/>

**Open Government Data of Thailand**

บ้าว็บ กดดูเพลิน  
ค้นหาข้อมูล  
จำนวนข้อมูล 27,597 ชุดข้อมูล

<https://data.go.th/>

en de fr ru - intro - about

Format ⓘ  
 Shapefile (Esri)  
 show LatLng 5,508 km<sup>2</sup>

Name of area to extract ⓘ or search  
Bangkok

Your email address ⓘ  
thanithamky@gmail.com

2 min

Select a different area ⓘ  
 add points to polygon Ⓢ  
 resize or drag polygon Ⓢ

extract

To change the polygon, you have to first click on it and then you can move, resize or extend it. Please press the extract button after you are done with polygon creation.

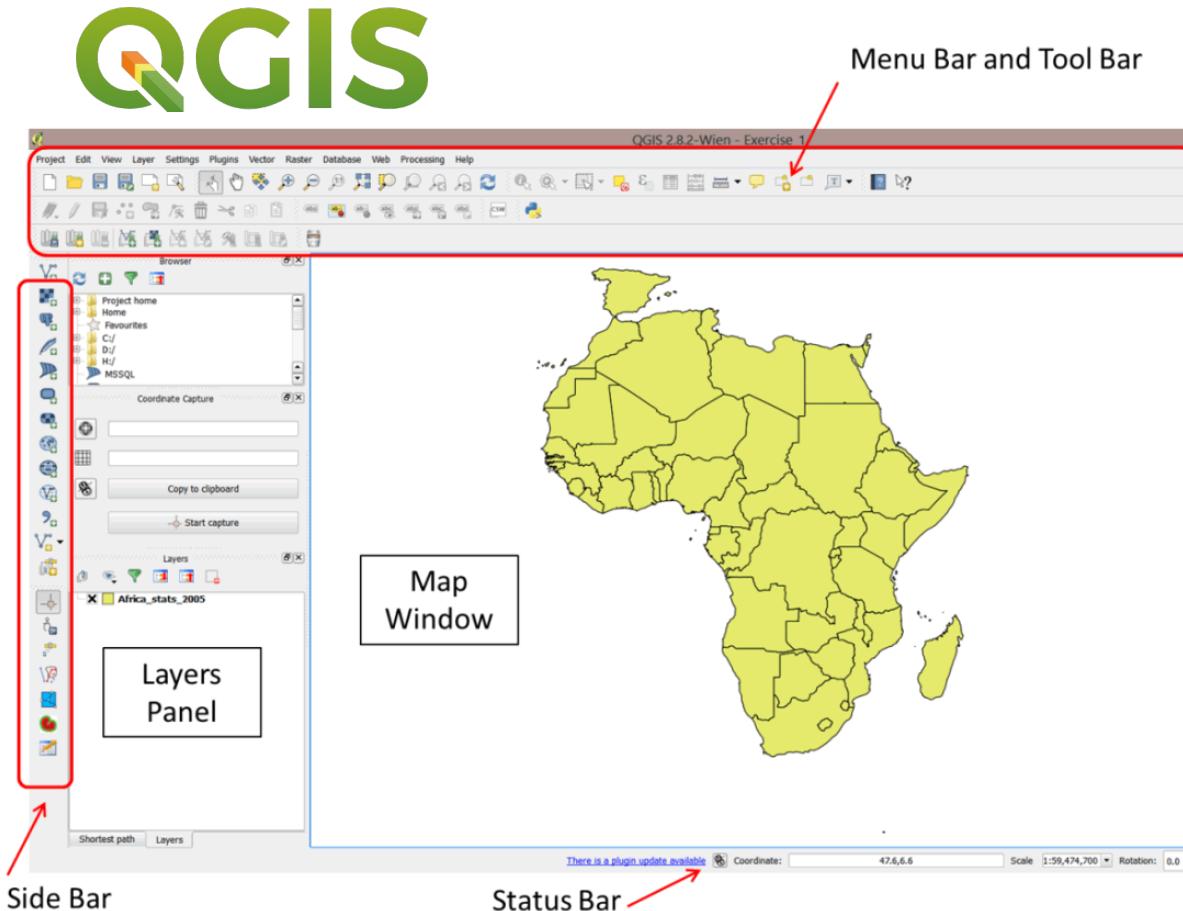
Donate  
via [PayPal](#) [Bank Transfer](#) [Bank Transfer](#)

home | help | garmin | status | download | commercial support  
(c) 2024 BBBike.org by Wolfram Schneider  
Map data (c) OpenStreetMap contributors

last database update: 2024-11-13T00:00:00Z 101.19285,-13.34144

<https://extract.bbbike.org/>

# Play with data in QGIS



Thailand Admins. > DIVA GIS

[https://data.go.th/dataset/flood\\_point](https://data.go.th/dataset/flood_point)

<https://maps.envi.dev/>

[https://data.go.th/dataset/department\\_store](https://data.go.th/dataset/department_store)

OSM map > BBBIKE Planet (\*pre-downloaded)  
*for example*

# Introduce to Git



and



# People use git for...

This screenshot shows a GitHub profile page for a user named 'thanthamky'. The profile picture is a circular photo of a young man with dark hair, wearing a black t-shirt. Below the photo, the name 'Thantham K.' and the handle 'thanthamky' are displayed, along with a 'Edit profile' button. To the right, there are stats: '1 follower · 3 following'. A location badge indicates 'Bangkok and Chang Mai, Thailand'. The main content area shows the README.md file of the repository 'thanthamky / README.md'. The README contains a greeting with a yellow hand icon, a brief bio mentioning a Ph.D. in Remote Sensing and GIS, and a list of interests including being based in Thailand, learning Full-stack app development, and being open to multidisciplinary collaboration. It also states a no-failure philosophy. Below the README is a 'Skills' section featuring icons for various programming languages and tools.

thanthamky / README.md

Hi 🙌 My name is Thantham K.

Ph.D. in Remote Sensing and GIS, Geospatial Consultant and Researcher, Data scientist, Web-GIS system developer

- 📍 I'm based in Thailand
- ✉️ You can contact me at [thanthamky@gmail.com](mailto:thanthamky@gmail.com)
- 🌐 I'm learning Full-stack app development, state-of-the-art geospatial technology, Bleeding edge AI
- 🤝 I'm open to collaborating on Geospatial system architecture, GeoAI integration and GIS for multidisciplinary
- ⚡ No failure, No success

**Skills**

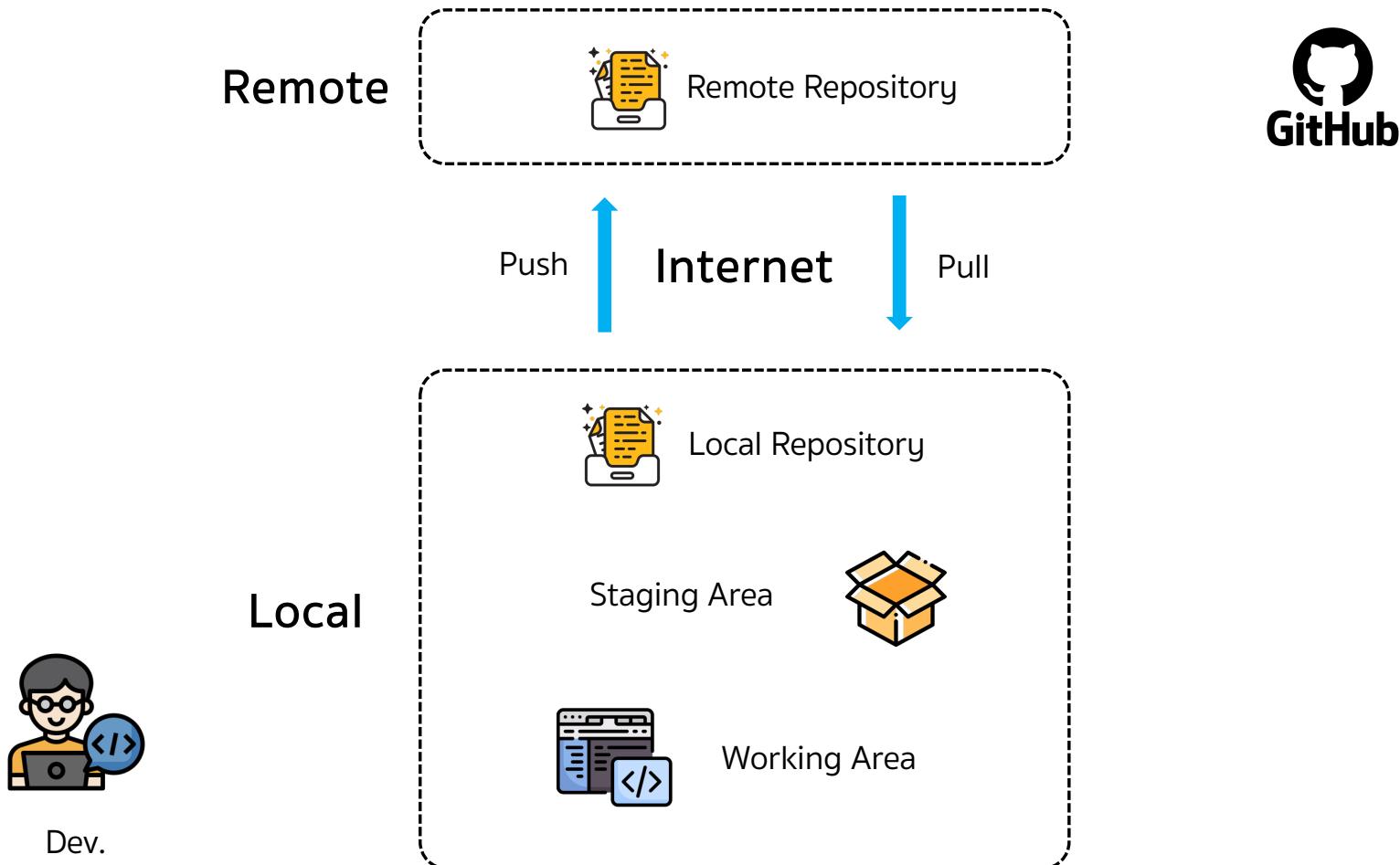
C Go Python R SQL JavaScript React Node.js AWS Docker macOS

## Portfolio

A screenshot of a web browser window. The address bar shows the URL "thanthamky.github.io/test-gi...". The main content area displays the text "Hello GitHub, This is Thantham's page" in a large, bold, black font.

# Showcase

# Know this better than know nothing about git...



# Today tasks



Register Github

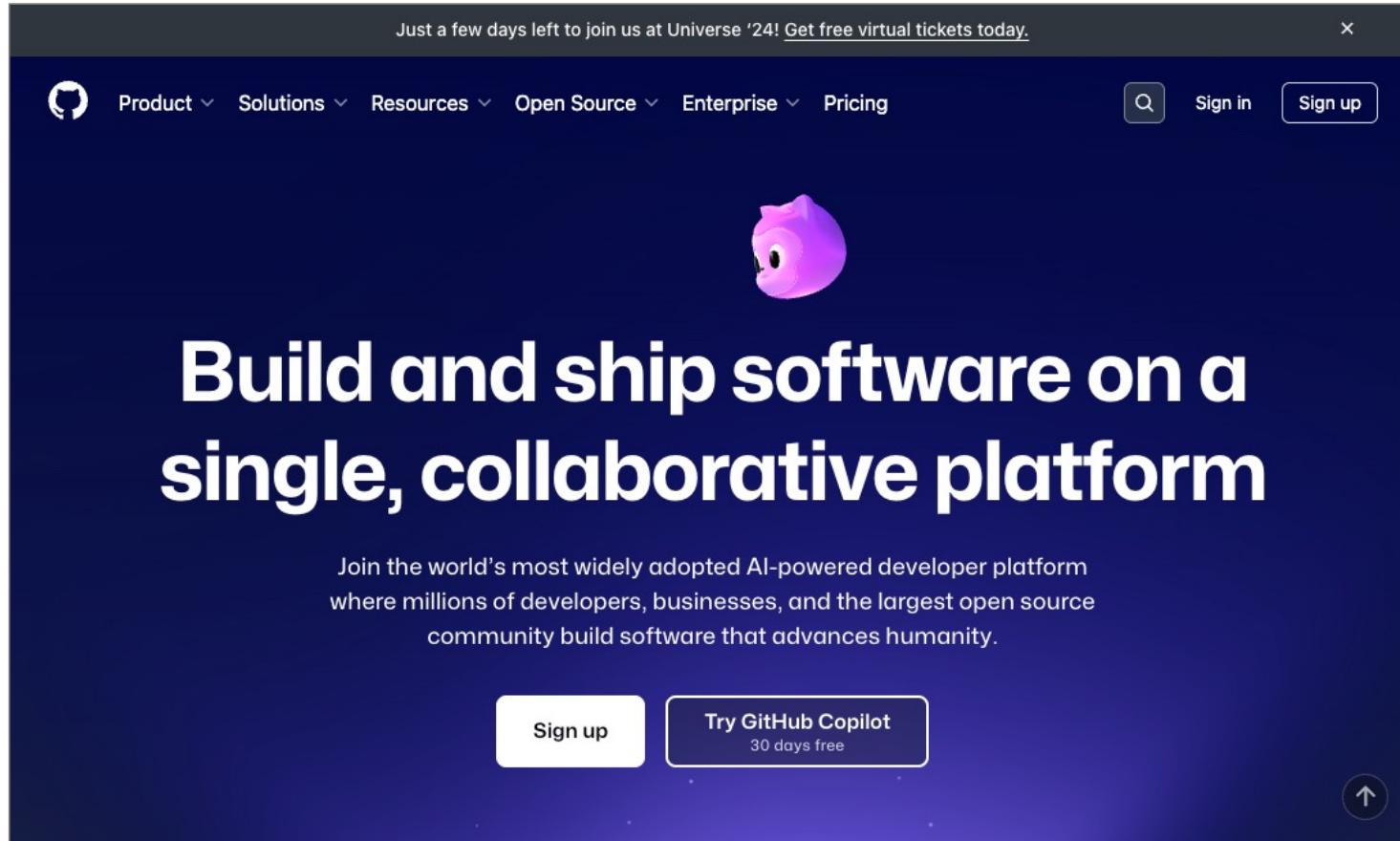
A screenshot of a GitHub profile page for the user 'thanthamky'. The profile picture is a circular photo of a young man. The bio section says: "Hi 🤝 My name is Thantham K. Ph.D. in Remote Sensing and GIS, Geospatial Consultant and Researcher, Data scientist, Web-GIS system developer". Below the bio is a bulleted list of interests and skills: "• I'm based in Thailand", "• You can contact me at [thanthamky@gmail.com](mailto:thanthamky@gmail.com)", "• I'm learning Full-stack app development, state-of-the-art geospatial technology, Bleeding edge AI", "• I'm open to collaborating on Geospatial system architecture, GeoAI integration and GIS for multidisciplinary", and "• No failure, No success". The 'Skills' section shows various icons representing different technologies and languages.

Make Git profile

A screenshot of a GitHub repository page for the user 'thanthamky'. The repository is named 'main'. The README file contains the text: "Hi 🤝 My name is Thantham K. Ph.D. in Remote Sensing and GIS, Geospatial Consultant and Researcher, Data scientist, Web-GIS system developer". Below this is a bulleted list of interests and skills: "• I'm based in Thailand", "• You can contact me at [thanthamky@gmail.com](mailto:thanthamky@gmail.com)", "• I'm learning Full-stack app development, state-of-the-art geospatial technology, Bleeding edge AI", "• I'm open to collaborating on Geospatial system architecture, GeoAI integration and GIS for multidisciplinary", and "• No failure, No success". The 'Skills' section shows various icons representing different technologies and languages. The repository has one commit by 'thanthamky' updating the README.md file 1 minute ago, and another commit by 'thanthamky' updating the README.md file 1 minute ago.

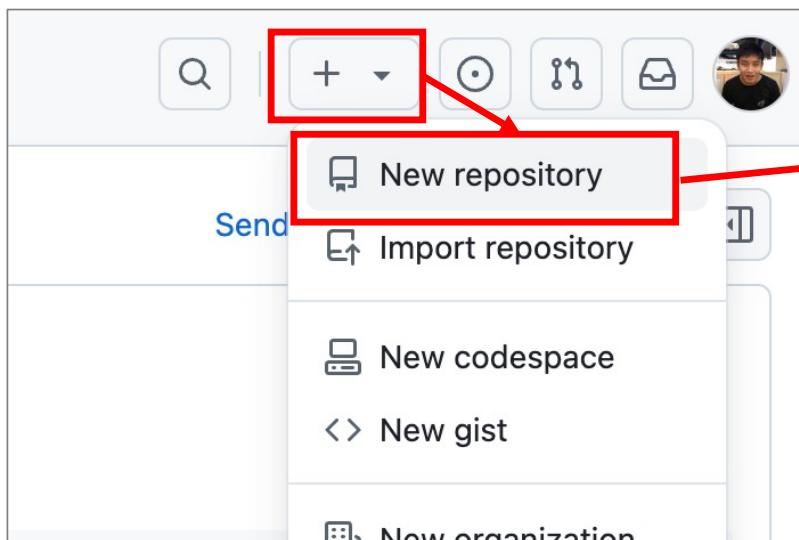
Create repository

# Register for Github



<https://github.com/>

# Create repository



## Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository](#).

Required fields are marked with an asterisk (\*).

### Repository template

No template

Start your repository with a template repository's contents.

Owner \*

 thanthamky

Repository name \*

/ web  
 web is available.

Great repository names are short and memorable. Need inspiration? How about [fuzzy-couscous](#) ?

### Description (optional)

### Public

Anyone on the internet can see this repository. You choose who can commit.

### Private

You choose who can see and commit to this repository.

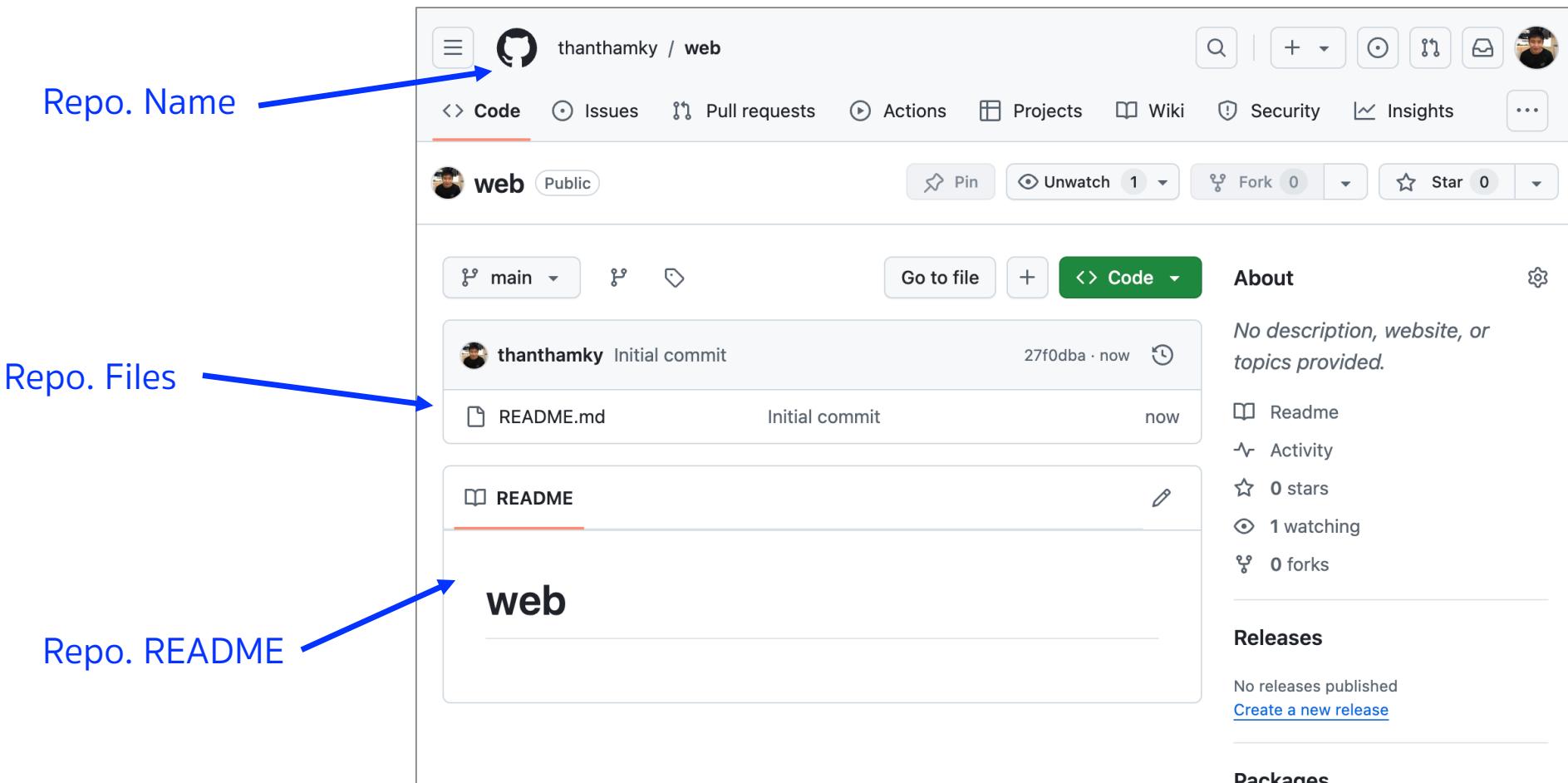
### Initialize this repository with:

#### Add a README file

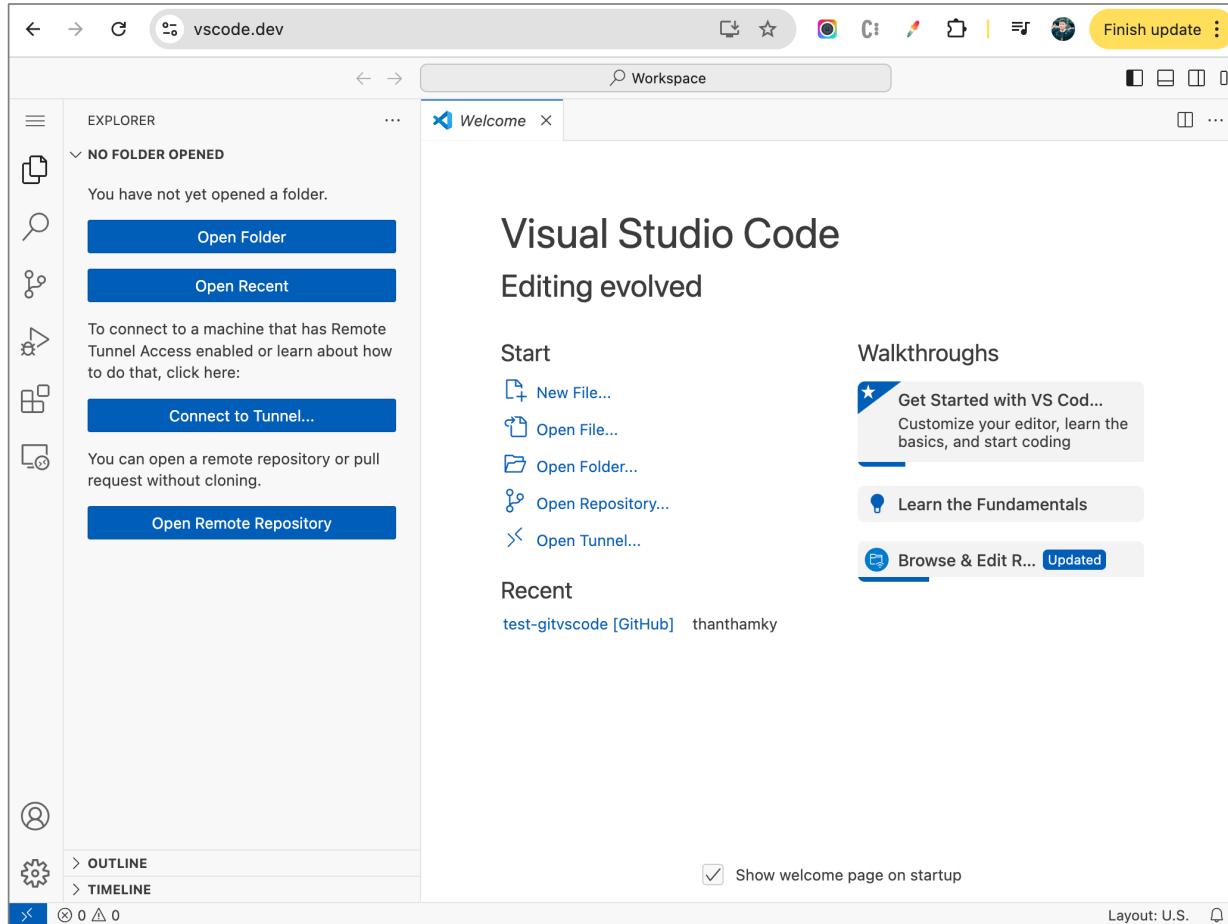
This is where you can write a long description for your project. [Learn more about READMEs](#).

**Create repository**

# Empty repository



# Tool to manage repository



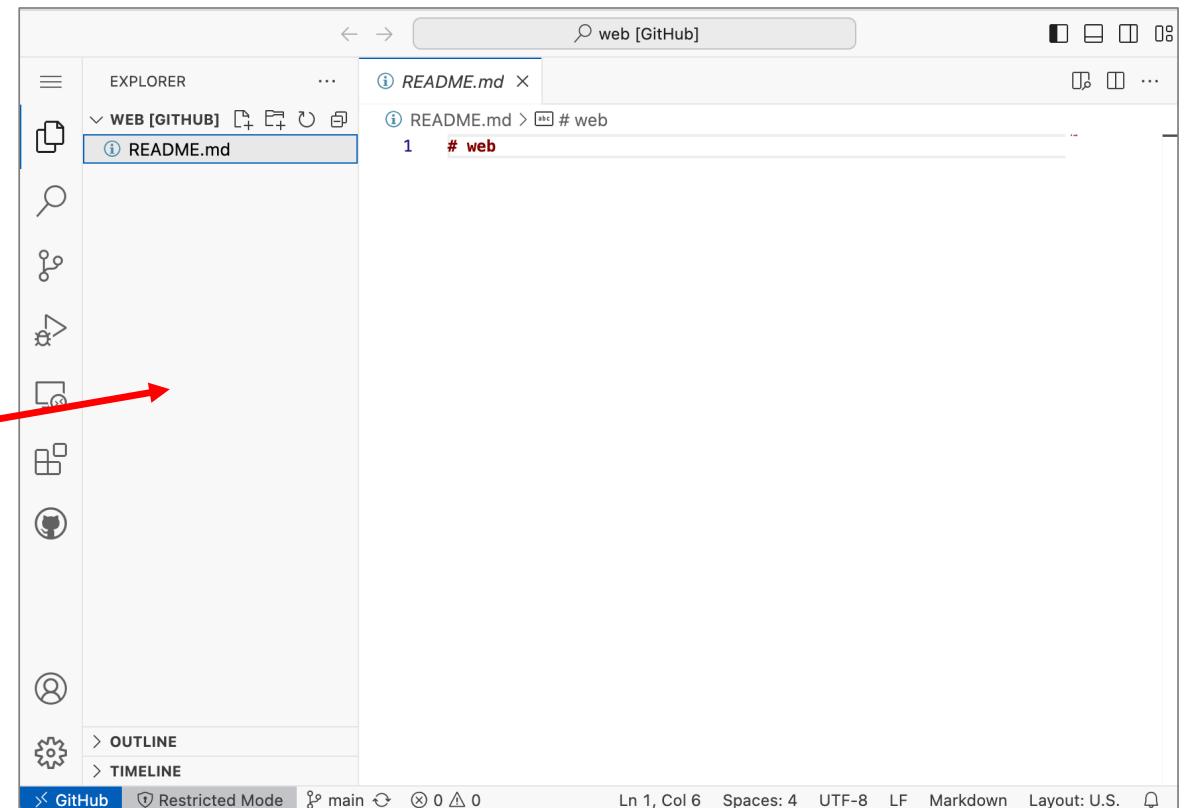
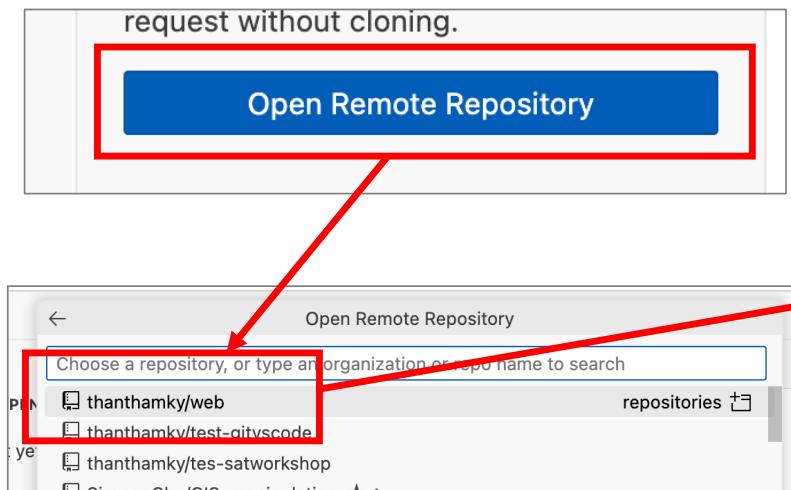
<https://vscode.dev/>

# Use github in vscode.dev

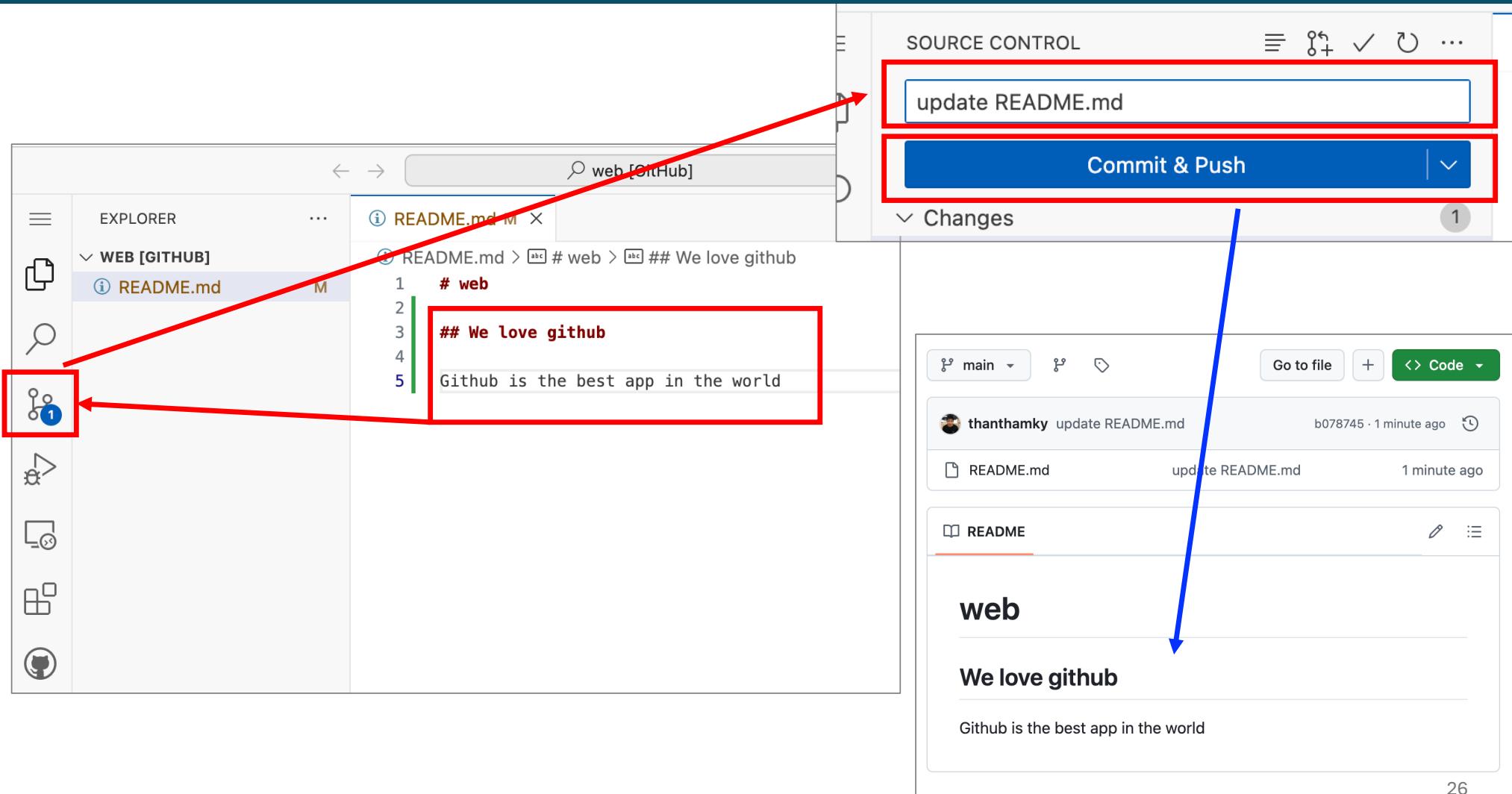
The image shows a composite of three screenshots illustrating the process of using GitHub in the vscode.dev environment.

- Open Remote Repository....**: A screenshot of the "Open Remote Repository" dialog in VS Code. A red box highlights the "Open Repository from GitHub" option in the list of providers.
- Editing evolved**: A screenshot of the main VS Code interface showing a GitHub sign-in dialog. The dialog says "The extension 'GitHub Repositories' wants to sign in using GitHub." It features an "Allow" button (which is also highlighted with a red box) and a "Cancel" button.
- Authorize Visual Studio Code**: A screenshot of the GitHub authorization page. It shows the Visual Studio Code icon and the GitHub logo with a green checkmark. The text reads "Visual Studio Code by Visual Studio Code wants to access your thantham122097 account". A red box highlights the "Authorize Visual Studio Code" button at the bottom right of the page.

# Browse git repository via vscode



# Update resources in repo.



# Share your portfolio

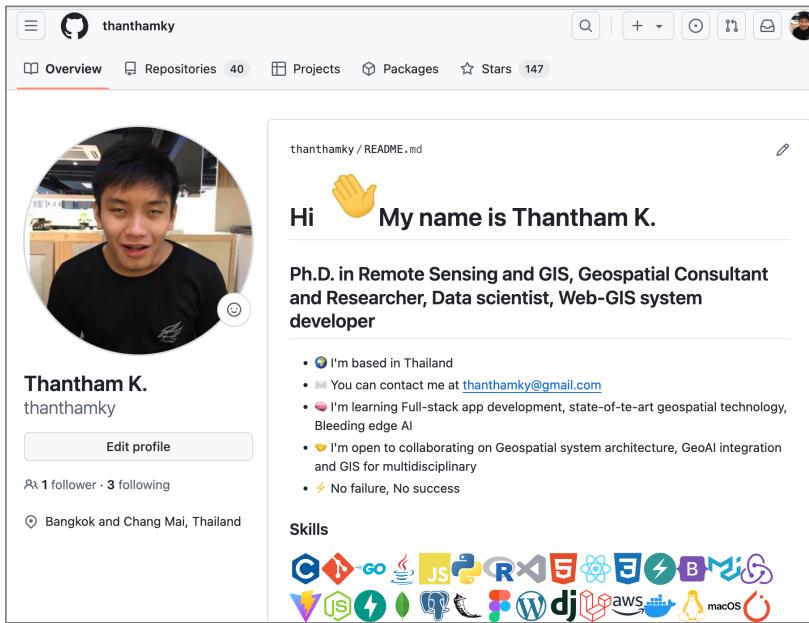
The screenshot shows a GitHub repository page for the user 'thanthamky' named 'web'. The repository is public and contains one file, 'README.md'. The README content includes the text 'web' and 'We love github' followed by the message 'Github is the best app in the world'. The repository has 1 watch, 0 forks, and 0 stars. It also lists 1 update to the README file by 'thanthamky'.

Files

Instruction

<https://github.com/thanthamky/web>

# Git profile maker

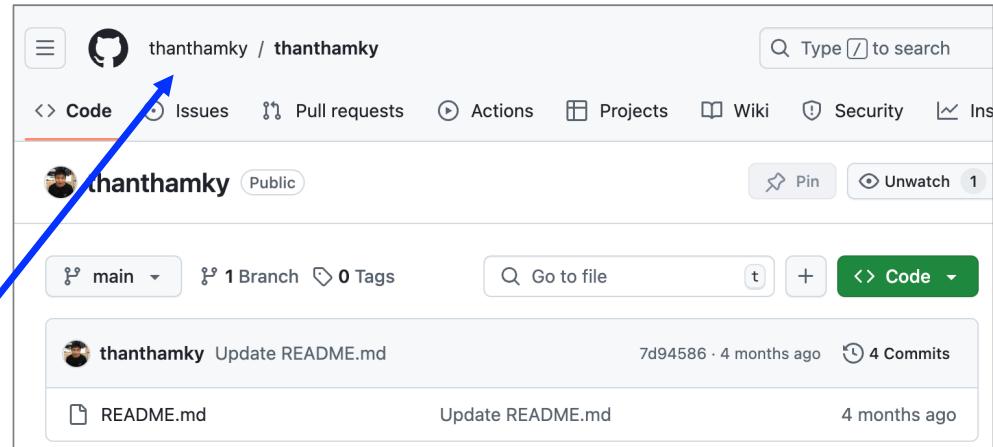


The screenshot shows the ProfileMe.dev website. The top navigation bar includes links for Overview, Repositories, Projects, Packages, Stars, and a user icon. A prominent blue button on the right says "CREATE PROFILE". The main heading is "Create an amazing GitHub profile in minutes". Below it, text encourages users to "Show off your skills, experience and projects. Generate markdown for your profile with just a few clicks!". There are three main buttons: "VISIT REPO (DEVELOPERS)", "CREATE PROFILE" (in blue), and "SPONSOR PROJECT". At the bottom, there's a preview of a generated GitHub-style profile card for "Peter Parker" with sections for Introduction and Skills.

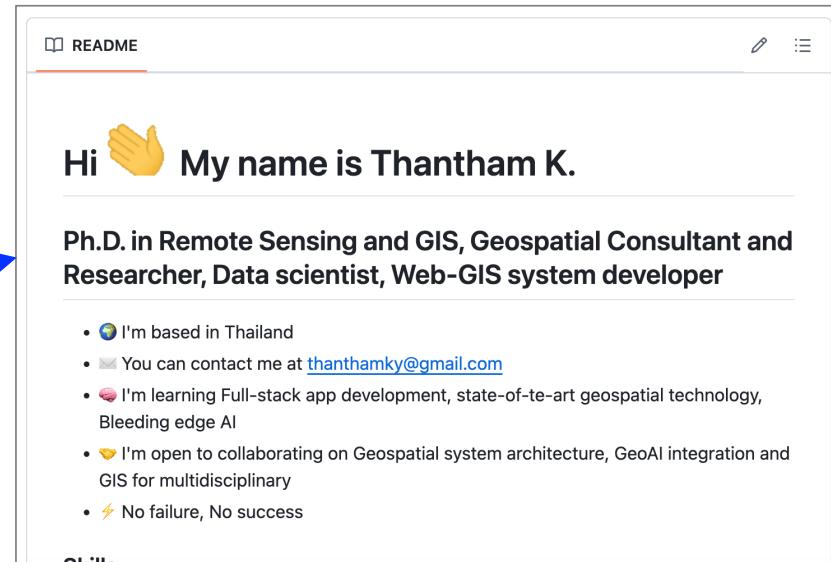
<https://www.profileme.dev/>

# Make git profile

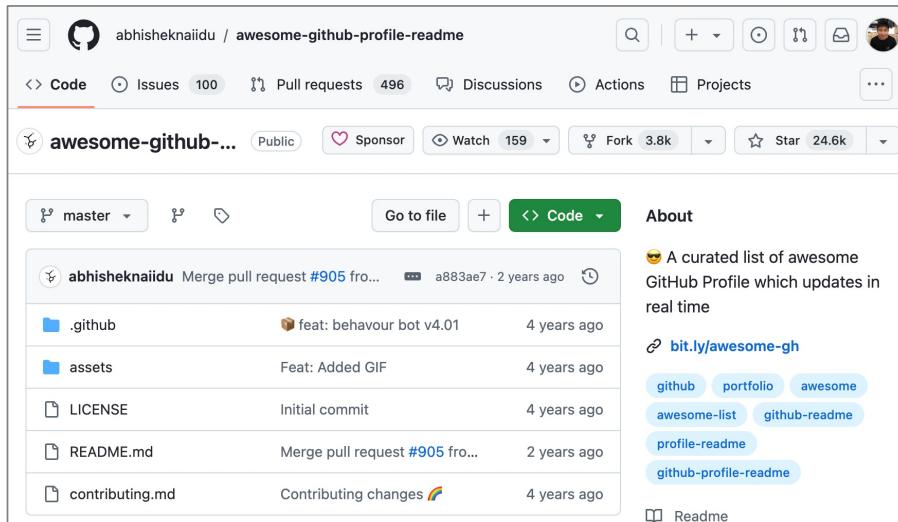
Create repo same name as username



Edit README.md  
using copied markdown

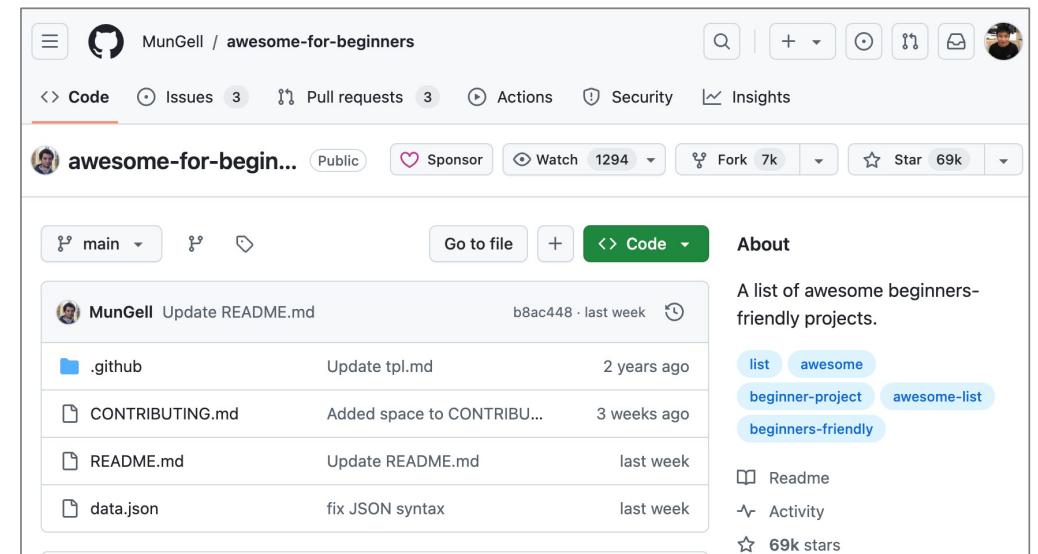


# Try something different?



A screenshot of a GitHub repository page. The repository name is `abhisheknaidu / awesome-github-profile-readme`. The main navigation bar shows `Code` as the active tab, followed by `Issues 100`, `Pull requests 496`, `Discussions`, `Actions`, and `Projects`. Below the navigation bar, there's a summary card for the repository, including a star icon for `24.6k` stars and a fork icon for `3.8k` forks. The repository has `159` watchers. The code tab is selected, showing a list of files. The `README.md` file is visible at the bottom of the list.

<https://github.com/abhisheknaidu/awesome-github-profile-readme>



A screenshot of a GitHub repository page. The repository name is `MunGell / awesome-for-beginners`. The main navigation bar shows `Code` as the active tab, followed by `Issues 3`, `Pull requests 3`, `Actions`, `Security`, and `Insights`. Below the navigation bar, there's a summary card for the repository, including a star icon for `69k` stars and a fork icon for `7k` forks. The repository has `1294` watchers. The code tab is selected, showing a list of files. The `README.md` file is visible at the top of the list.

<https://github.com/MunGell/awesome-for-beginners>