Basil Presentation: Streamlit

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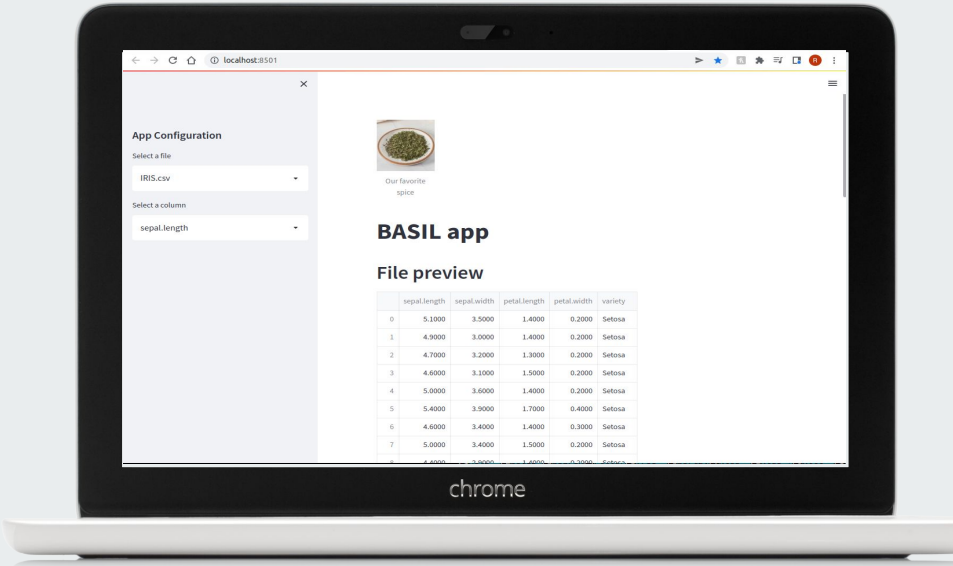
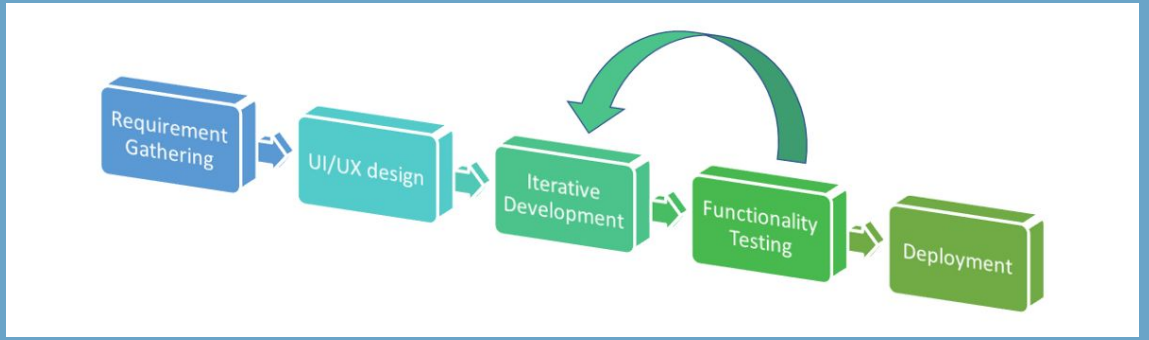


- *Streamlit from scratch*
- *Single page app with some useful widgets*
- *Multipage apps*
- *Pros and cons, deployment etc*

What is Streamlit?

- Streamlit is an open source **python** framework for building web apps for Data Science and Machine Learning.
- Benefits include:
  - Quick learning curve
  - Allows for rapid prototyping of apps
  - Aesthetic apps (no need for custom CSS)
  - Compatible with major Python libraries such as scikit-learn, Keras, PyTorch, SymPy(latex), NumPy, pandas, Matplotlib etc
  - Lightweight and easy to deploy

Typical Web App Development Process for DS



Possible app development process for DS/ML

- App development process invariably involves specialists such as front end web developers, back end web developers and possibly UI/UX designers.
- Can slow down the process especially when a rapid prototype is needed to solicit end user feedback

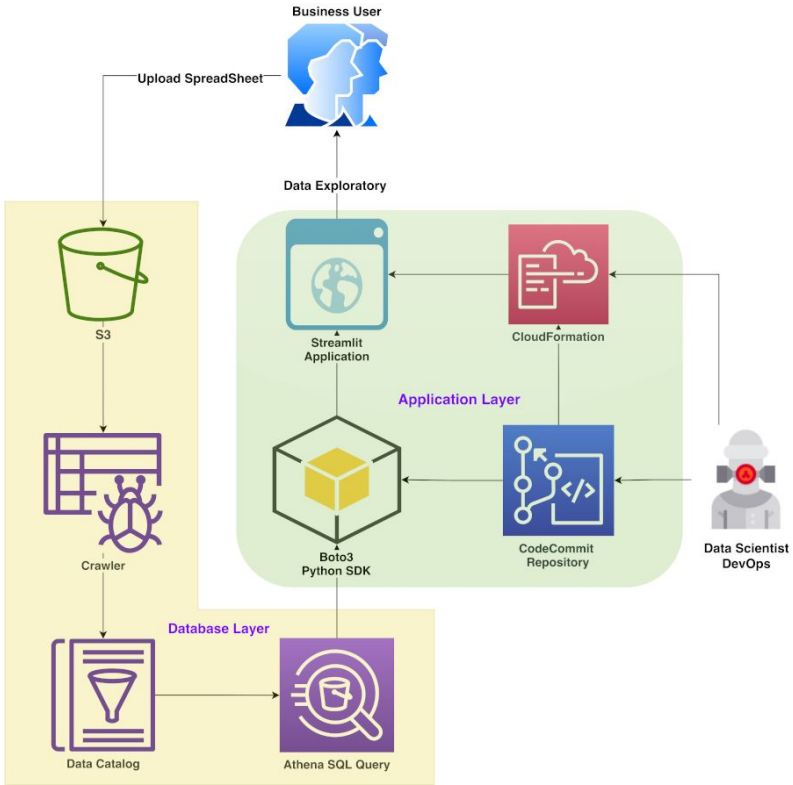
Live demo time!

Deployment Requirements

- ➔ Streamlit is relatively lightweight
  - ◆ Runs on Tornado web server (single threaded, **has some implications**)
- ➔ Requires a single outward bound port to be opened
  - ◆ Default is 7501 (can be changed in config)
- ➔ Can be deployed on Sagemaker, EC2, ECS etc quite easily
  - ◆ Security group needs to allow outbound port

Example use Case

- Example deployment example on AWS:
  - Business user uploads spreadsheet on AWS S3
  - Crawler updates data catalog
  - Streamlit app queries athena and creates analytical views for end user
  - Allows for user-selectable parameter and create downloadable links etc



Other Example use Cases

- ML Model predictions are updated on a batch basis and stored in S3/Athena
    - Streamlit can use Python API to grab predictions for quick prediction debugging or User Acceptance Test
- First-stage ML model runs and requires business/tech end-user configuration to be manually set before second-stage model runs
    - Use streamlit as a config app to collect configuration and kick off second stage
- ML model has been trained and pickled on AWS S3
    - Streamlit can be used to provide an interface for end-user to upload csv file with inference features and provide them with corresponding predictions.