GENERAL ASSEMBLY

WEB DEV: DEPLOYING YOUR MACHINE LEARNING ALGOS TO HEROKU WITH FLASK

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AGENDA

- What is web development?
- What is Heroku/Flask
- MVC
- Deploying KNN

GENERAL ASSEMBLY

WEB DEVELOPMENT

- The work involved with building and maintaining a live website

- Two types

- What are they?

Two types

- Front-end Development
  - HTML/CSS
  - Responsive Design
  - Make things easy to use and visually pleasing
- Back-end Development
  - Many backend languages!
  - Model View Controller
  - Database work
  - Makes the site “work”

Two types

- Full-stack development comprises of both front end and back end work

WEB DEV

- We must know the technologies used to be an effective developer (or at least communicate with developers!)

Gotta know…

- Web-framework
- The database work and logistics of the site
- Deployment
- How we serve the website

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WEB DEV

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HEROKU / FLASK

HEROKU / FLASK

- Web dev is hard
- GA has several classes dedicated to it…
- We will use to very simply web dev tools: **Heroku** an **Flask**

HEROKU / FLASK

- Are we going to Post Pub?

Flask

web development,
one drop at a time

HEROKU / FLASK

- Are we going to Post Pub?

- Flask is a micro-web-framework based entirely in Python

- We can create and write the entire backend in Python!

HEROKU / FLASK

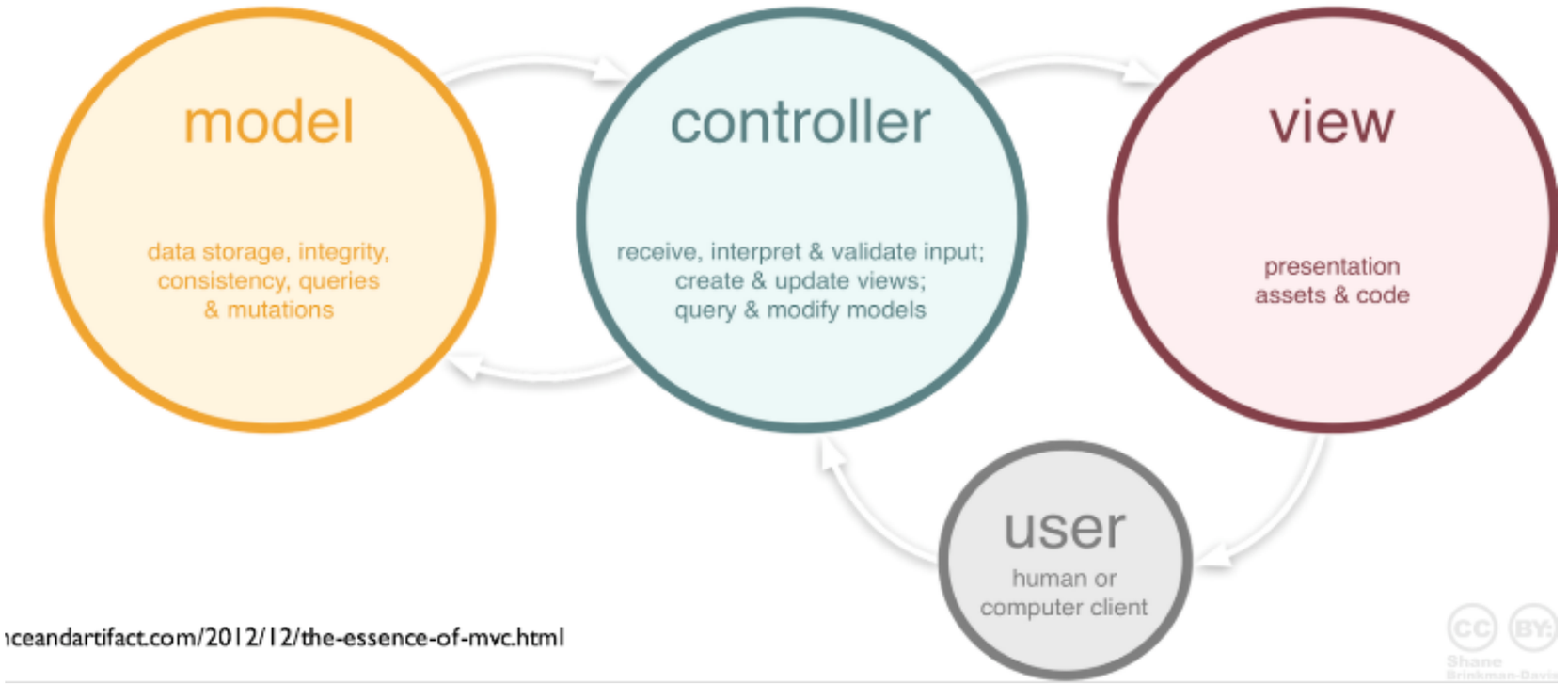
- Heroku?

- Heroku is a Salesforce company that allows us to deploy our sites easily
- That means we can rent Heroku servers to host our site

MODEL VIEW CONTROLLER

MVC

- MVC is a mentality.
- **It is a way of life.**



- http://www.essenceandartifact.com/2012/12/the-essence-of-mvc.html

HEROKU / FLASK

ModelView Controller:

- **Model**
- Responsible for managing the data
- It’s kind of like a database

- **View**
- Presents the data / app
- Responsible for design / user experience

- **Controller**
- Response to the user input and performs operation based on it
- EG user inputs number of neighbors, and controller trains the model

HEROKU / FLASK

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- **Model (Backend)**
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DEPLOYING KNN

HEROKU / FLASK

- Sample Flask App

- https://github.com/josephofiowa/GA_iris

Sample Flask App

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- We have:
  Model
- Views (templates)
- Controller (controller.py)

HEROKU / FLASK

Sample Flask App

- https://github.com/josephofiowa/GA_iris
- CLONE IT (in a **NEW** repo)

Sample Flask App

- https://github.com/josephofiowa/GA_iris

- Run it locally: got to root and run:
- **Python controller.py**

- **Visit http://127.0.0.1:5000**

- **(If there are errors: sudo pip install –r requirements_clean.txt)**

Sample Flask App

- We have two forms
- The top form trains the model
- The bottom form predicts the incoming data
- What part of MVC handles input?

Sample Flask App

- The machine learning lives in the folder
- It is pickled…

Sample Flask App

- The machine learning lives in the folder
- It is pickled…
- The standard mechanism for serializing an object
- It has been transformed into a file!

HEROKU / FLASK

Step by step!

- 1) Signup for Heroku
- 2) Create a new app
- 3) Clone our flask app
- 4.) Run the command: heroku git:remote –a <app>
- 5.) install the custom build pack for scipy and numpy (also installs sklearn)
- Heroku config:set BUILDPACK_URL=https://github.com/thenovices/heroku-buildpack-scipy --app <app>
- 6.) git add, git commit. **Git push heroku master** (instead or origin)
- 7.) Profit