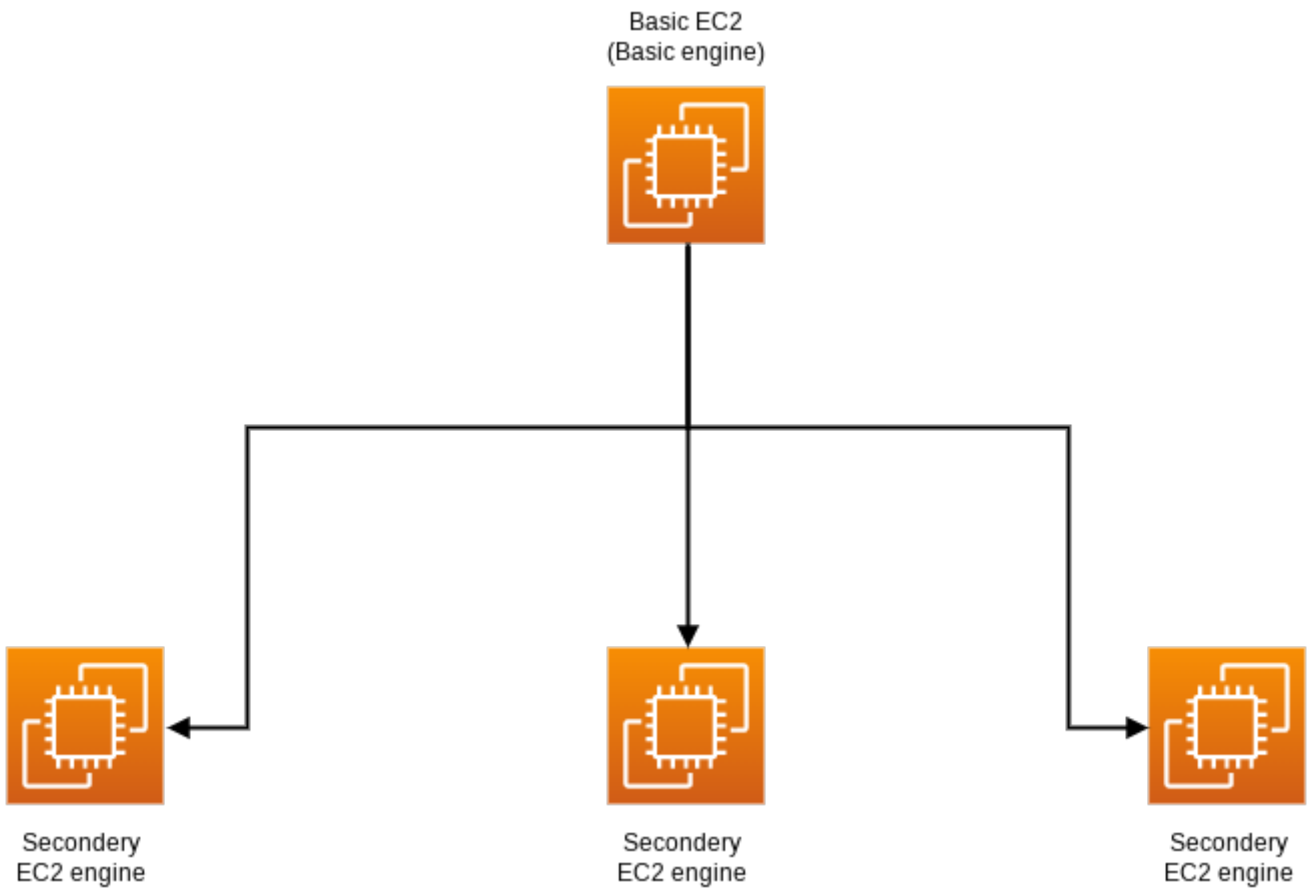
Deployment (Microservices) Back-end

Explain:

Deployment Back-end handles our two layers models between any servers and interactions between them and communicates with Middleware Backend and itself.



- First thing we install a system on every server we want to use and make initial setup.
    - Initial setup establish file system and scripts needed and addressing all servers by basic configuration file.

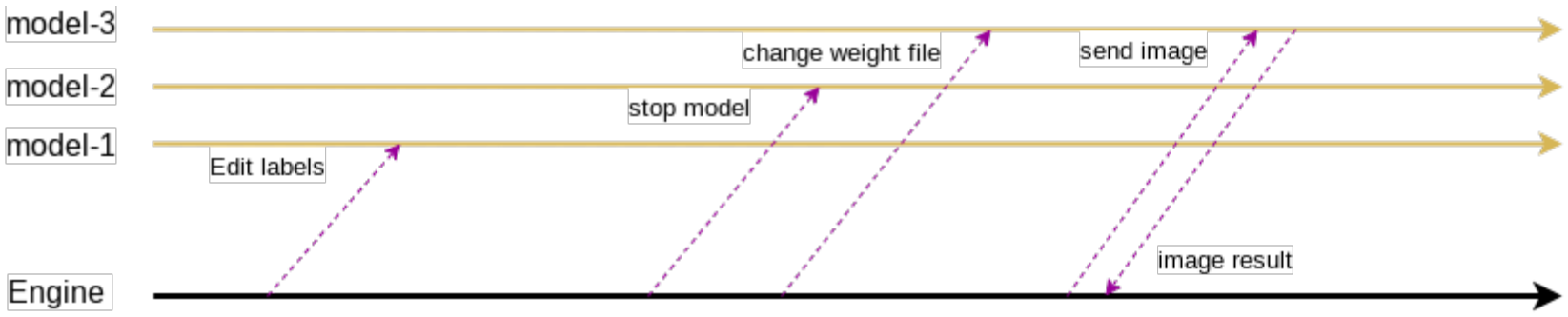
```
[Servers]
number = 1
    [Servers.0]
    ipv4 = "41.44.5.83"
```

    - Start all engines and make servers.
    - Loading all models written in basic Toml configuration file.

```
[Basic]
parent = 0
model = '1-rfV85rTtGRMCi3ljUN0FgKnsiLjnPf5'

[Second]
    [Second.0]
    parent = 0
    #Acne
    #9
    model = '1ECwXvWlPmi7m5frvhGq5z2vfPhldAU8j
```

- When all engines running they making sure that all basic engine connected to basic engine.
    - All ips cahnges will go to basic engine and change it in configrations.
    - Every engine response to handling models in it server (run model edit it and remove it) and redirct images to correct services **(that contain modls)**.



- All changes will be saved in small database saves system state.
- **Basic engine** has api to receive all changes from `Midlle-ware dashboard` and handle images and send images scores .

```
//response format
{
    "category": "Acne and Rosacea",
    "predection": [
        {
            "diseases": "milia",
            "probability": 0.9999897480010986
        },
        {
            "diseases": "Rosacea",
            "probability": 5.848230102856178e-06
        },
        {
            "diseases": "Infantile acne",
            "probability": 1.3212483054303448e-06
        }
    ],
    "propability": 0.9999912977218628
}
```

tools:

- **Framework and libraries**:
  - We using **`FastApi`** for wrapping models ,**`FastApi`** is very fast and optimizable and we also using it for engines.
  - We using **`AWS EC2's`** and sometimes **`Digitalocean droplets`** for servers.
  - We using libraries like **`jinja`** for templating models ,and networks libraries (**`Requests`**), and os libraries(**`os , subprocess`**) and toml for configuration.
    - Bash scripts for running files and make for setup configuration in servers.
    - **`Tensorflow`** and **`keras`** for models prediction process.
- **Languages** :
  - **python**
  - **bash**
- **Tools and library**:
  - `Pycharm` :For coding and testing .
  - `vsCode` :Also for coding and testing.
  - `Anaconda` :For python environments.

- **Licences:**
    - MIT licences
    - BSD.