Breast Cancer Diagnosis Visualization

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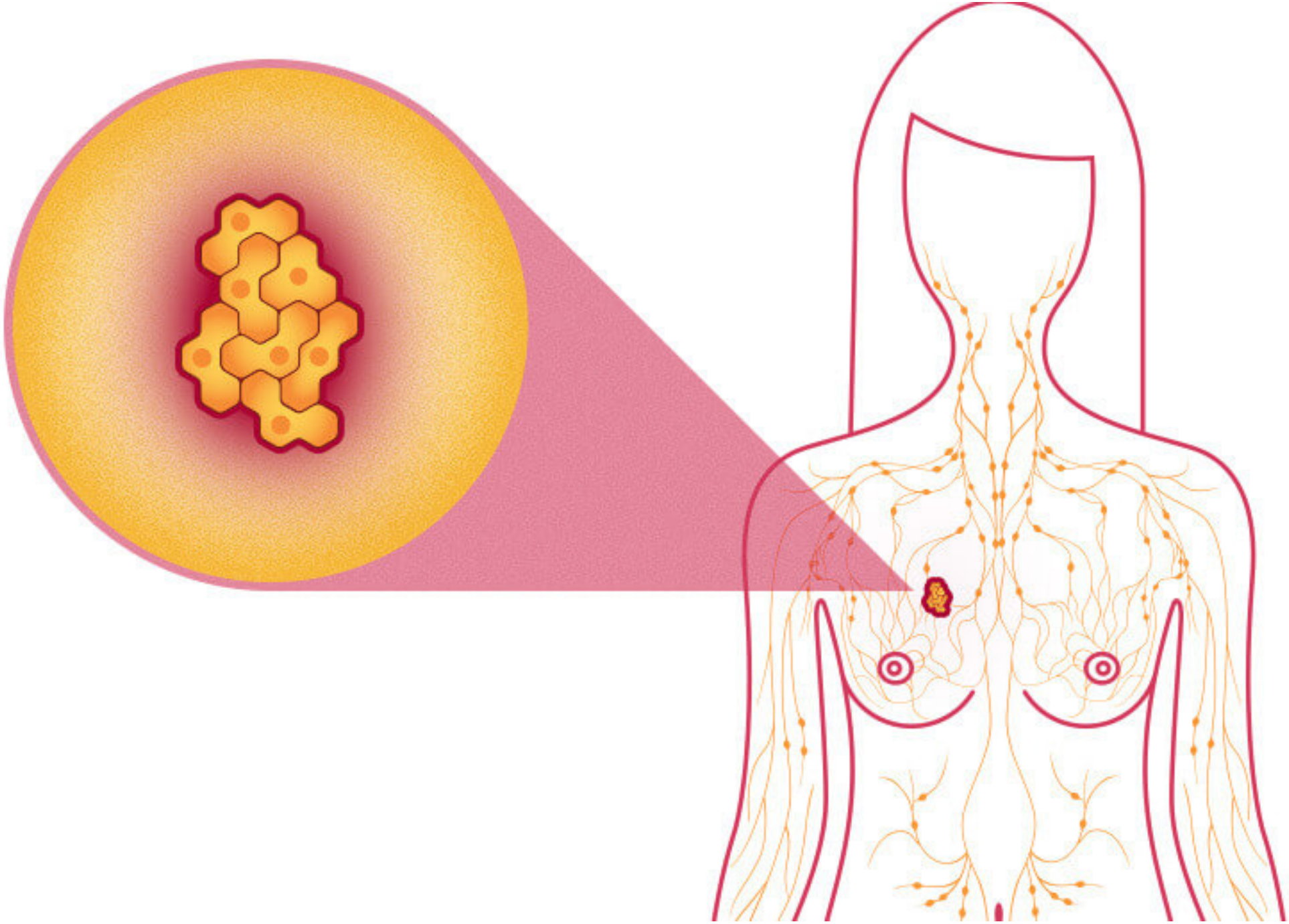


Hypothesis

- How many participants in diagnosis research have tested as Malignant.

- The tissue radius in Malignant patients will increase as cancer progresses.

How do we get the data?

- Data from https://www.kaggle.com/uciml/breast-cancer-wisconsin-data
  - Using the Wisconsin breast cancer diagnostic data set for predictive analysis
- Total participants (600 females)

- Type of Diagnosis(From Breast Tissue)
  - B = Benign(localize not spread)
  - M =Malignant(invade/cancerous growth)

- Testing method: Fine-needle aspiration (FNA)

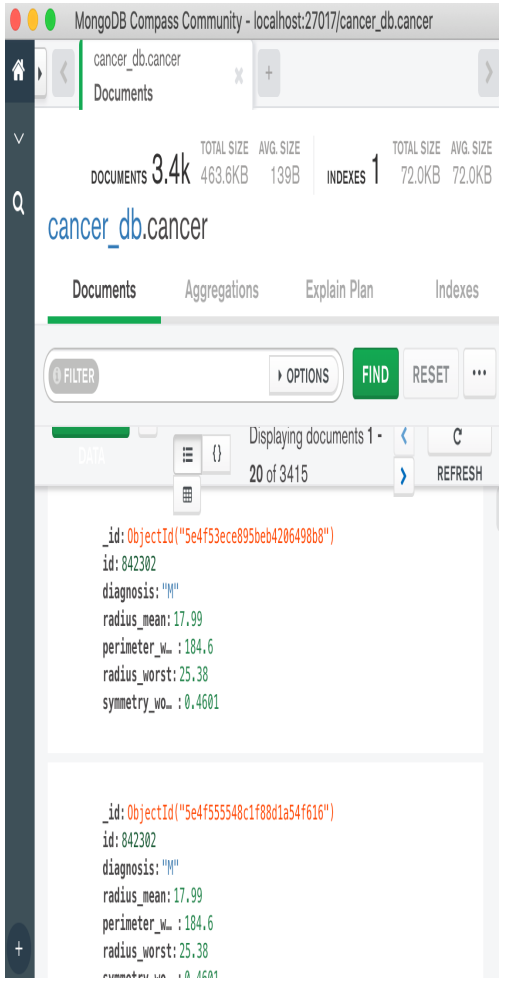
Fine-Needle Aspiration

- Fine-needle aspiration (FNA) is a diagnostic procedure used to investigate lumps or masses. In this technique, a thin (23–25 gauge), hollow needle is inserted into the mass for sampling of cells that, after being stained, will be examined under a microscope (biopsy). Fine-needle aspiration biopsies are very safe minor surgical procedures.

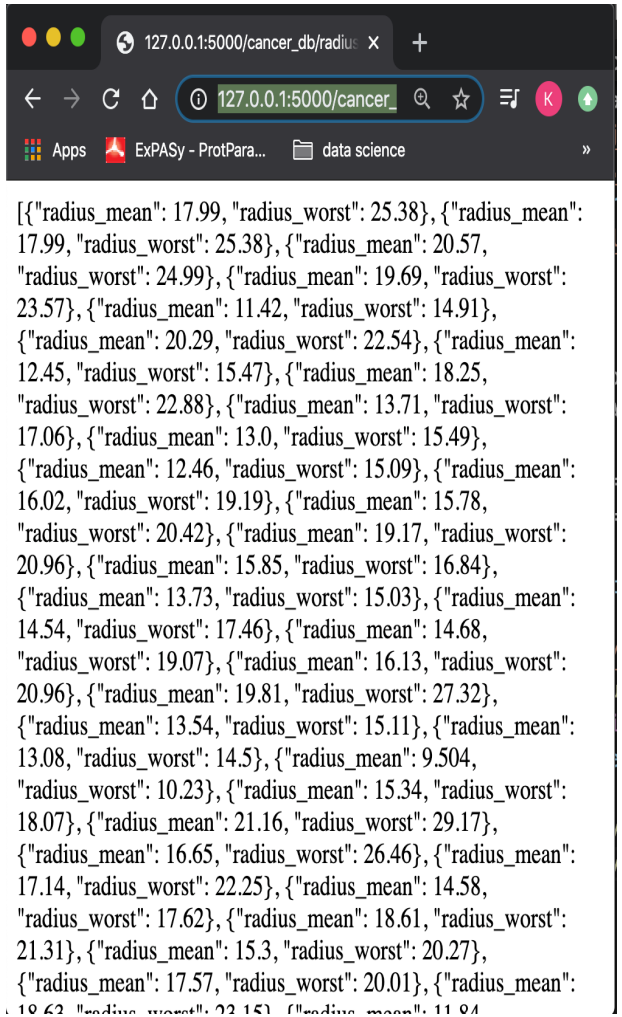
Data Processing

- Python : Clean data, select the interested data
- Data storage : MongoDb
- Data Channel : Python_Flask
- Dashboard: HTML, CSS, Chart.js
- Observe

Data Processing Continues

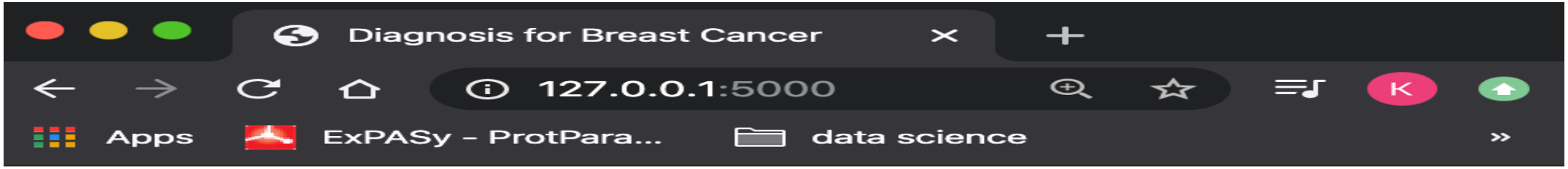


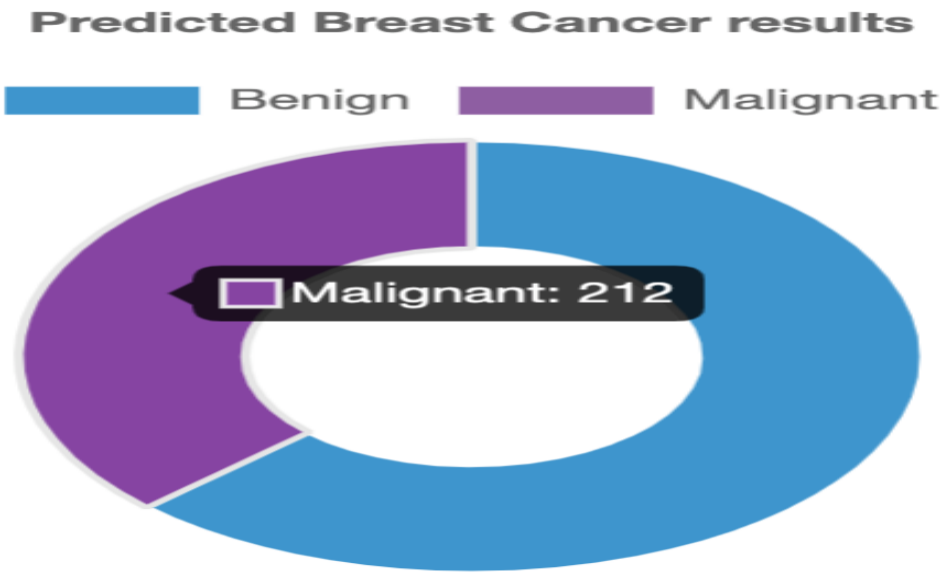

```python
@app.route("/cancer_db/cancer")
def cancer_db_cancer():
    connection = MongoClient(MONGODB_HOST, MONGODB_PORT)
    collection = connection[DBS_NAME][collection_name]
    cancer = collection.find(projection=FIELDS)
    json_cancer = []
    for row in cancer:
        json_cancer.append(row)
    json_cancer = json.dumps(json_cancer, default=json_util.default)
    connection.close()
    return json_cancer
```



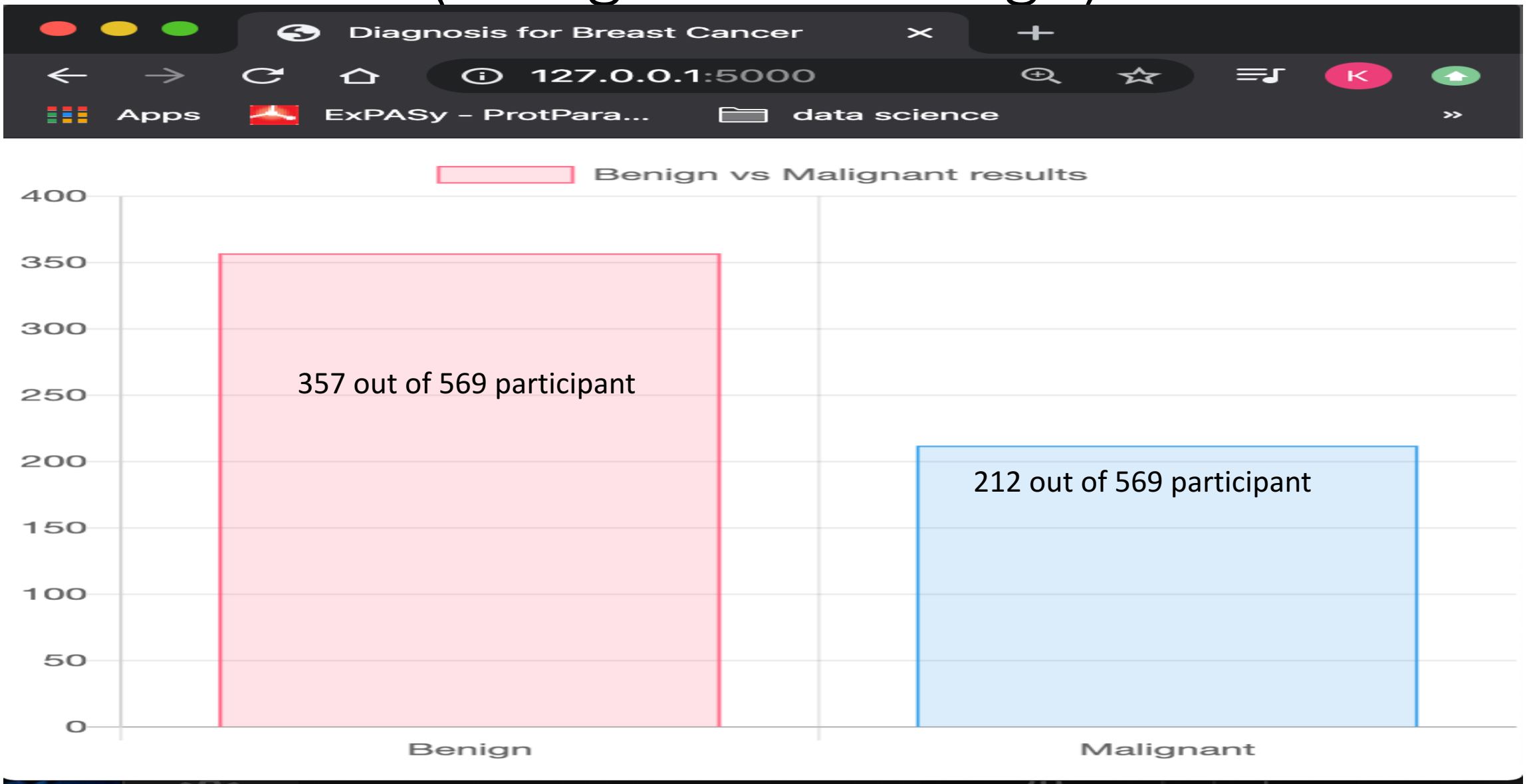

```html
<script>
const api_url = "http://127.0.0.1:5000/cancer_db/cancer"
    async function getRadius(){
    const response = await fetch(api_url);
    const data = await response.json();
    const { radius_mean, radius_worst} = data ;
    document.getElementById("radius_mean").textContent = radius_mean;
    document.getElementById("radius_worst").textContent = radius_worst;
    console.log(radius_mean)
    console.log(radius_worst)


    }
    getRadius();
```

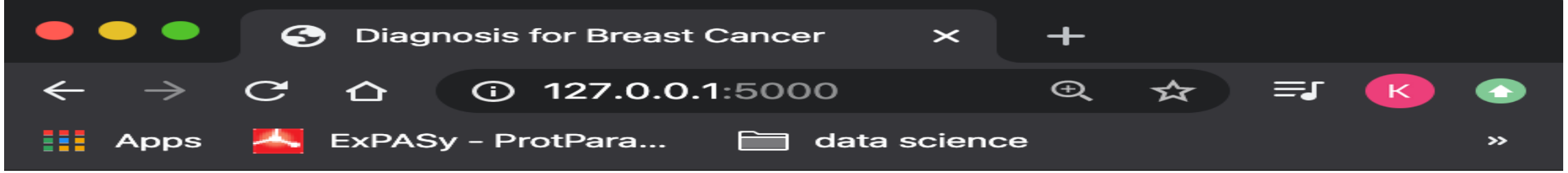
Visualization (Malignant vs Benign)



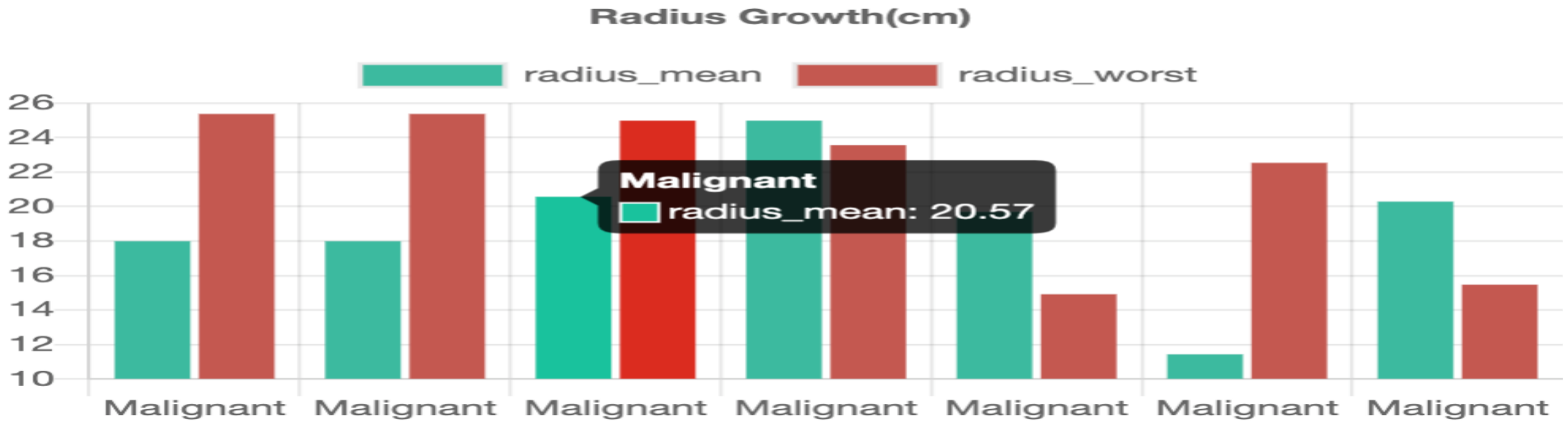


Visualization (Malignant vs Benign)



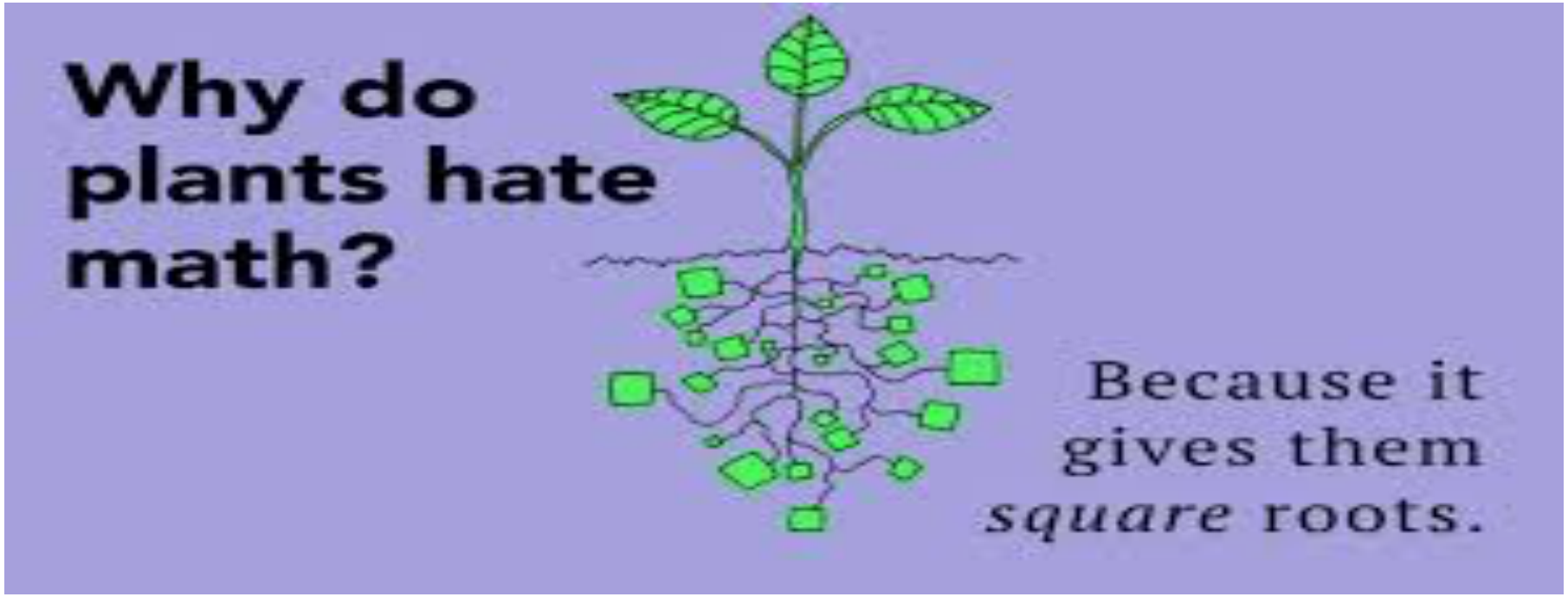


As we expected, The radius of Malignant patient's tissue is getting worse as the disease progress.



Observation

- 37% of Participants have been diagnosed as Malignant patients.
- The tissue radius in Malignant patients will increase a progress!!
- Should Females use FNA for Breast Cancer diagnosis?



Question?