abbvie

Accelerating Genetic Research with AI for the World's 4th Largest Pharma Major

CASE STUDY

MANTRA LABS

The Client

AbbVie is an American publicly traded biopharmaceutical company, originated as a spin-off of **Abbott Laboratories.** They combine advanced science, expertise and passion to solve the world's most serious health issues and have a remarkable impact on people's lives.

The
Challenges

01 Listing of genes with their weighted interconnectivity found in research papers.

02 A visualisation framework that provides visual representation of genes/proteins, and their associated interconnectivity.

03 A tool to process this massive database, and to save & retrieve data seamlessly.

The
Objective

AbbVie wanted to build a system that enabled faster research capabilities using AI. The proposed network could combine multiple sources of biomedical literature and use them to show interactions between various proteins.
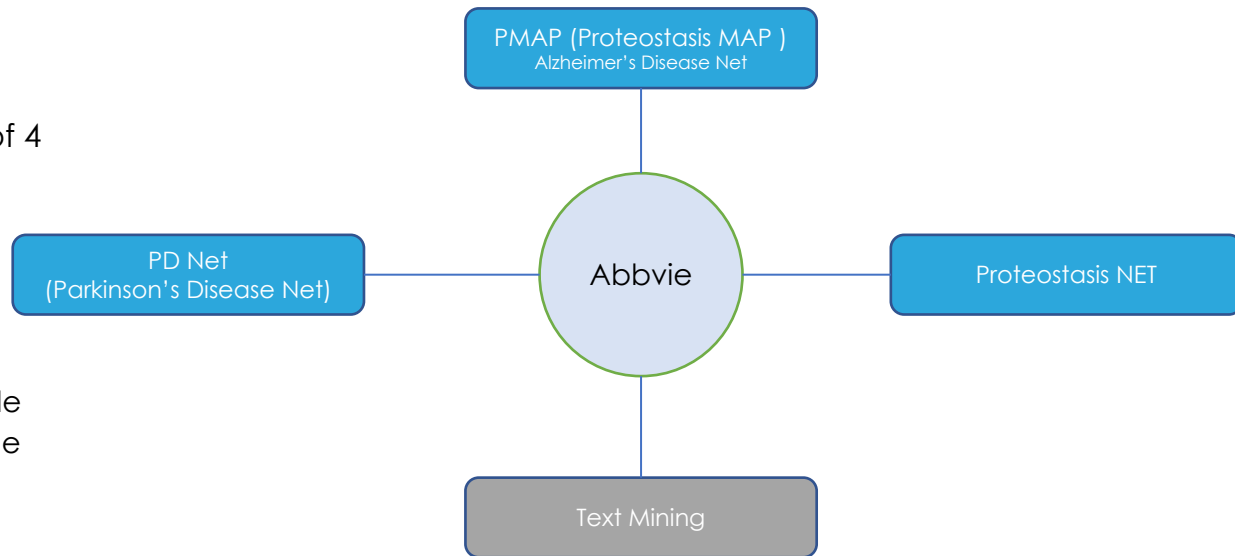
Solution
Components

- Text Parsing from complex expressions

- Frequency determination **(CountVector, nGrams)**

- **Identifying pairs** of genes including their location, sentence structure, and context

- Spectral Clustering **(Graph Partitioning)**

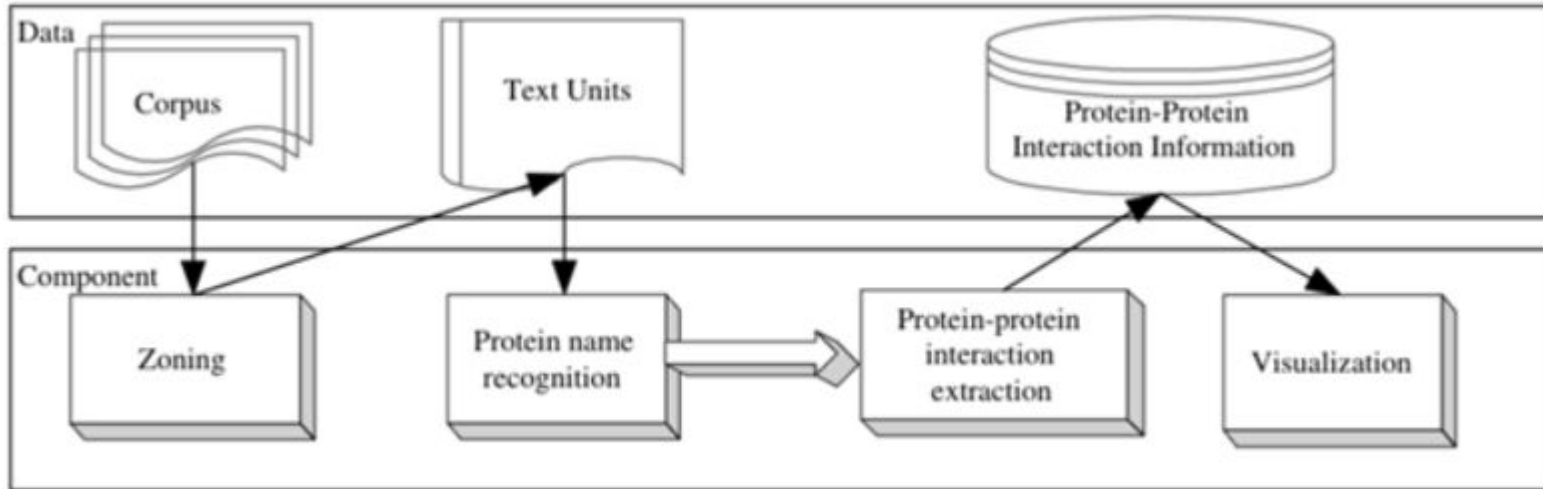- Seamless processing of large data sets

Solution

In order to automatically extract protein-protein extractions, the system we developed consisted of 4 main modules

1. Zoning Module
2. Protein name recognition module
3. Protein-protein extraction module
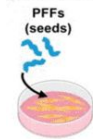4. Visualization module

PMAP (Proteostasis MAP)
Alzheimer's Disease Net

PD Net
(Parkinson's Disease Net)

Abbvie

Proteostasis NET

Text Mining

System
Architecture

The **Scientists'** View

Cluster Network
Visualization Module

Tech
Stack

Module
Specified UI

Backend

Database
(NoSQL)

PMAP / Proteostasis NET/ PDNet
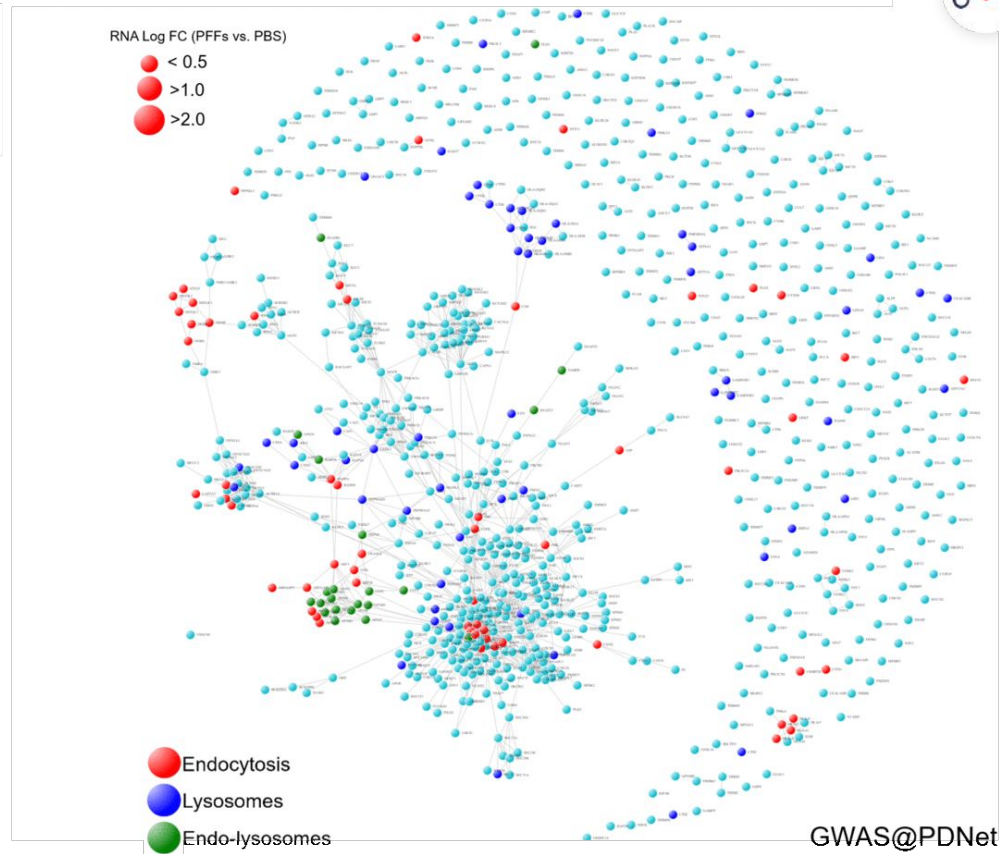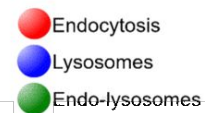
Text mining (full-stack framework)
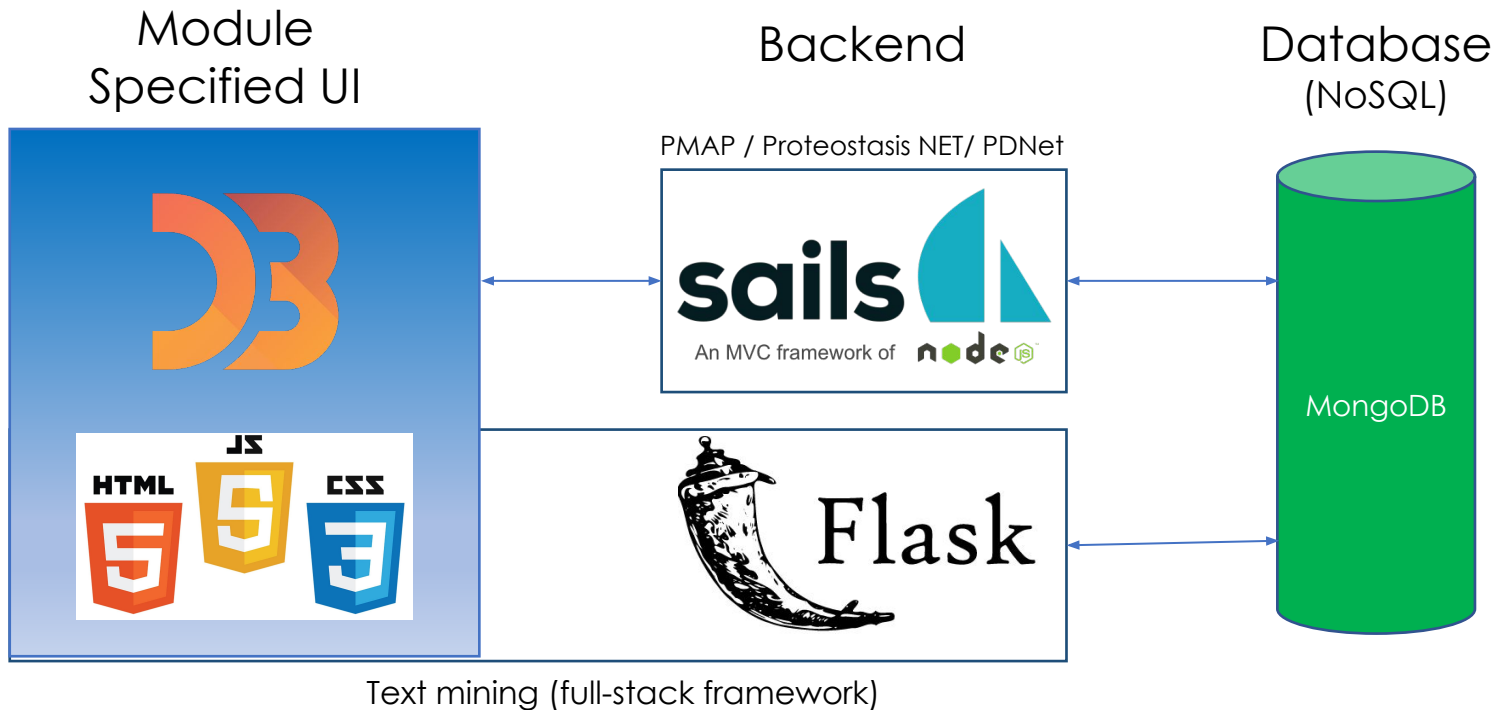
Key Domains

Healthcare, BFSI, Consumer Internet

ISO CERTIFIED COMPANY · amazon web services · CMMI DEV/3 · IBM Watson · Azure

SA SAFe · NASSCOM · mongoDB · INSURTECH 100 · NVIDIA

abbvie · CHANGE HEALTHCARE · Shell

SOSTOS · ALKEM · mLinkRx

PATHOMIQ · ManipalHospitals LIFE'S ON · Suraksha Clinic & Diagnostics

SBI general INSURANCE SURAKSHA AUR BHAROSA DONO · TATA AIA LIFE INSURANCE · Hero INSURANCE BROKING

ICICI Lombard Nibhaye Vaade · Canara Bank HSBC LIFE INSURANCE · ageasFEDERAL LIFE INSURANCE

care HEALTH INSURANCE · ADITYA BIRLA CAPITAL · DCM SHRIRAM Growing with trust

greenbrilliance POWERING A SOLAR FUTURE · USC Marshall School of Business · yulu

OLA · sgtradex · Myntra

Thank You

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