# ****Modeling Data Flow Diagram and Control Flow Diagram****

### ****Objective:****

**To understand how to model the **Data Flow Diagram (DFD)** and **Control Flow Diagram (CFD)** for a system. The goal is to represent how data and control signals move through the **Brain Disease Prediction** system, which utilizes machine learning for diagnosing brain diseases.**

## ****1. Project Overview:****

The **Brain Disease Prediction System** is a machine learning-based application that predicts brain-related diseases such as tumors, Alzheimer’s, or Parkinson’s by analyzing patient data, including MRI scans and medical records. The system supports inputs from doctors and patients and provides prediction results and reports.

## ****2. Data Flow Diagram (DFD)****

### ****Purpose:****

The **Data Flow Diagram (DFD)** represents how data enters, moves through, and is processed by the system.

### ****DFD Symbols:****

**Process (Circle):** Represents a function or activity.

**Data Flow (Arrow):** Shows movement of data.

**Data Store (Two horizontal lines):** Stores data.

**External Entity (Rectangle):** Source/destination of data.

### ****Level 0 DFD (Context Diagram):****

+------------+ +----------------------+ +-------------+

| Doctor | -----> | | <----- | Patient |

| | | Brain Disease | | |

| | <----- | Prediction System | -----> | |

+------------+ | | +-------------+

+----------------------+

|

v

+------------------+

| ML Prediction |

| and Reports |

+------------------+

### ****Level 1 DFD:****

+------------+ +--------------------+ +-----------------+

| Doctor | -----> | 1. Upload Patient | | 2. Preprocess |

| | | Data | -------> | Data |

| | +--------------------+ +-----------------+

| | |

| | v

| | +--------------------+ +-----------------+

| | <----- | 5. View Prediction | <------- | 3. Predict via |

+------------+ | Report | | ML Model |

+--------------------+ +-----------------+

^ |

| v

+-------------+ | +------------------+

| Patient | -------------->+ | 4. Store Results |

+-------------+ | in Database |

+------------------+

### ****Data Stores:****

**D1:** Patient Database

**D2:** ML Model

**D3:** Report Store

## ****3. Control Flow Diagram (CFD)****

### ****Purpose:****

The **Control Flow Diagram** shows the flow of control (decisions, conditions, loops) in the system rather than the flow of data. It's especially useful for understanding logic and sequencing.

### ****Control Flow Diagram for Prediction Process****

Start

|

v

[Doctor/Patient logs in]

|

v

[Upload MRI Scan + Details]

|

v

[Is Data Valid?] --No--> [Show Error & Retry]

|

Yes

|

v

[Preprocess Data]

|

v

[Send to ML Model]

|

v

[Prediction Result Received]

|

v

[Store Result in Database]

|

v

[Generate Report]

|

v

[Display to User]

|

v

End

## ****4. Tools for Diagram Creation****

You can use the following tools to draw DFDs and CFDs:

**Draw.io (diagrams.net)** – Free and easy-to-use

**Lucidchart**

**Creately**

**Microsoft Visio**

**Pencil Project**

## ****5. Conclusion****

The **Data Flow Diagram** helps visualize how data moves within the Brain Disease Prediction System, while the **Control Flow Diagram** outlines the logical flow and decision-making structure of the system. Together, these diagrams provide a comprehensive understanding of both data processing and system behavior, aiding in efficient design and development.