

#### Shri Govindram Seksaria Institute Of Technology & Science Indore (M.P)

#### **Computer Science & Engineering**

CO34999-B5

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**Supervisor's Name** – Associate Professer Surendra Gupta

Date of Submission - 24-03-2025

## TaxES

Get your ITR filed



## Background

Income tax planning deals with determining ways of utilizing the income of a person to minimize the amount of tax payable. The tax laws specify the amount of tax chargeable on the income of a person. They also specify certain tax reduction mechanisms. These are in the form of rebates from tax, deductions from chargeable income and exemptions from tax for certain types of income.

The purpose of income tax planning is to reduce the tax chargeable as much as possible. This planning is done taking into consideration the available tax reduction mechanisms and the tax payer's requirements and preferences.

## About the project

**Group B5** 

- We aim to create a tool to help Indian individuals file their tax returns.
- Develop an intelligent tax filing system that automatically suggests the appropriate ITR form.
- Integrate NLP to extract data from documents like salary slips.
- Calculate the total tax payable based on user data.
- Generate a pre-filled ITR form for the user based on the computed information.

## Gaps Identified

- Limited use of NLP in extracting specific information like salary from unstructured salary slips.
- Few tax tools provide auto-filled ITR forms based on complex tax rules and real-time calculations.

## **Problem Statement**

"How might we simplify and automate the process of filing income tax returns for Indian individuals by using expert systems and NLP to ensure accuracy and reduce complexity?"



#### Income Tax e-filing Portal

provides access to laws and forms and has an Income Tax Calculator

#### Vakil Search

Offers expert legal and compliance solutions

#### MyTaxIndia

Provides tax calculation for individuals

#### ClearTax

Provides tax calculation and other services

## The type of ITR you have to fill depends on--

#### What Type of Income you have?

These 5 Types of income are shown in the income Tax Act.

- Salary
- House Property
- Profits from Business
- Capital Gains
- Other Sources

## The department prescribes seven types of ITR forms based on the type of taxpayer and income:

ITR-1 Salary Income + House Property + Other Income (<50L)

ITR-2 Salary + Capital Gains + Multiple House Properties

ITR-3 Business Income, Professional Income, Trading

ITR-4 Presumptive Taxation for Businesses & Freelancers

**ITR-5** for partnership firms, LLP, AOP and BOI. Business entities such as LLP, partnership firms, AOP and BOI can file ITR-5 for reporting income from business and profession and any other source of income.

**ITR-6** is the income tax return for companies to file income from business or profession and any other sources of income.

ITR-7 is the income tax return for companies, associations and trusts claiming income tax exemption.

#### Which ITR will be applicable on you?

#### **Salaried Individuals:**

## Returns and Forms Applicable for Salaried Individuals for AY 2025-26

## 1. ITR-1(SAHAJ) - Applicable only for Individual:

This return is applicable for a Resident (other than Not Ordinarily Resident) Individual having Total Income from any of the following sources up to ₹ 50 lakh

- Salary / Pension
- One House Property
- Other sources (Interest, Family Pension, Dividend etc.)
- Agricultural Income up to ₹ 5,000

**Note**: ITR-1 cannot be used by a person who:

- Is a director in a company
- Has held unlisted equity shares during the previous year
- Owns assets or financial interests outside India
- Has signing authority in an account outside India
- Earns income from foreign sources
- Is subject to tax deduction under section 194N
- Has deferred tax payment on ESOPs
- Has brought forward or carry forward losses under any income head
- Has total income exceeding ₹50 lakh

#### 2. ITR-2 - Applicable for Individual (Not eligible for ITR 1) and HUF

This return is applicable for Individual and Hindu Undivided Family (HUF)

- Not having Income under the head Profits and Gains of Business or Profession
- Who is not eligible for filing ITR-1

#### 3. ITR-3- Applicable for Individual and HUF

This return is applicable for Individual and Hindu Undivided Family (HUF)

- Having Income under the head Profits and Gains of Business or Profession
- Who is not eligible for filing ITR-1, ITR-2 or ITR-4

## 4. ITR-4 (SUGAM) - Applicable for Individual, HUF and Firm (other than LLP)

This return is applicable for an Individual or Hindu Undivided Family (HUF), who is Resident other than Not Ordinarily Resident or a Firm (other than LLP) which is a Resident having Total Income up to ₹ 50 lakh and having income from Business or Profession which is computed on a presumptive basis (u/s 44AD / 44ADA / 44AE) and income from any of the following sources:

- Salary / Pension
- One House Property
- Other sources (Interest, Family Pension, Dividend etc.)
- Agricultural Income up to ₹ 5,000

**Note** 1: ITR-4 is not applicable to a person who:

- Is a director in a company
- Has held unlisted equity shares during the previous year
- Owns assets or financial interests outside India
- Has signing authority in an account outside India
- Earns income from foreign sources
- Has deferred tax payment on ESOPs
- Has brought forward or carry forward losses under any income head
- Has total income exceeding ₹50 lakh

#### Forms Applicable:

Form 12BB - Particulars of claims by an employee for deduction of tax (u/s 192)

Form 16 - Certificate of Tax Deducted at Source on Salary (U/s 203 of the Income Tax Act, 1961)

Form 16A - Certificate u/s 203 of the Income Tax Act, 1961 for TDS on Income other than Salary

**Form 67**- Statement of Income from a country or specified territory outside India and Foreign Tax Credit

Form 26 AS - AIS (Annual information Statement)

**Form 15G** - Declaration by resident taxpayer (not being a Company or Firm) claiming certain receipts without deduction of tax

**Form 15H** - Declaration to be made by a resident individual (who is 60 years age or more) claiming certain receipts without deduction of tax

**Form 10E** - Form for furnishing particulars of Income for claiming relief u/s 89(1) when Salary is paid in arrears or advance

#### Investments / Payments / Incomes on which I can get tax benefit

Following deductions will be available to a taxpayer opting for the New Tax Regime u/s 115BAC:

- 1. **Section 24(b)**
- 2. Section 80CCD(2)
- 3. Section 80CCH

#### Tax deductions in the Old Tax Regime:

- Section 24(b)
- Section 80C, 80CCC, 80CCD (1)
- Section 80CCD(1B)
- Section 80CCD(2)
- Section 80CCH
- Section 80D
- Section 80DD
- Section 80DDB

- Section 80E
- Section 80EEA
- Section 80EEB
- Section 80G
- Section 80GG
- Section 80GGA
- Section 80GGC
- Section 80TTA
- Section 80TTB
- Section 80U

#### **Business/Profession:**

- ITR-3 Applicable for Individual & HUF
- ITR-4 (SUGAM) Applicable for Individual, HUF & Firm (Other than LLP)
- Form 16A --- Certificate u/s 203 of the Income Tax Act, 1961 for TDS on Income other than Salary
- Form 26 AS --- AIS (Annual information Statement)
- Form 3CB-CD
- Form 15G Declaration by resident Taxpayer (not being a Company or Firm) claiming certain receipts without deduction of tax
- Form 15H Declaration to be made by a resident Individual (who is 60 years age or more) claiming certain receipts without deduction of tax
- Form 3CEB

#### Senior/Super Senior Citizon

- ITR-1(SAHAJ) Applicable only for Individual
- ITR-2 Applicable for Individual (Not eligible for ITR 1) and HUF
- ITR-3 Applicable for Individual & HUF
- ITR-4 (SUGAM) Applicable for Individual, HUF & Firm (Other than LLP)
- Form 16 Details of Tax Deducted at Source on salary (Certificate u/s 203 of the Income Tax Act, 1961)
- Form 16A --- Certificate u/s 203 of the Income Tax Act, 1961 for TDS on Income other than Salary
- Form 26 AS --- AIS (Annual information Statement)
- Form 3CB-CD
- Form 12BB Particulars of claims by an employee for deduction of tax (u/s 192)
- Form 15H Declaration to be made by a resident Individual (who is 60 years age or more) claiming certain receipts without deduction of tax
- Form 3CEB

#### Non-Resident:

- Hindu Undivided
- Family

(HUF):

- ITR-2 Applicable for Individual (Not eligible for ITR 1) and HUF
- ITR-3 Applicable for Individual & HUF

Same All Forms (Salary Employed, Business/Profession)

- ITR-2 Applicable for Individual (Not eligible for ITR 1) and HUF
- ITR-3 Applicable for Individual & HUF
- ITR-4 Applicable for Individual, HUF and Firm (other than LLP)

Same All Forms (Salary Employed, Business/Profession)

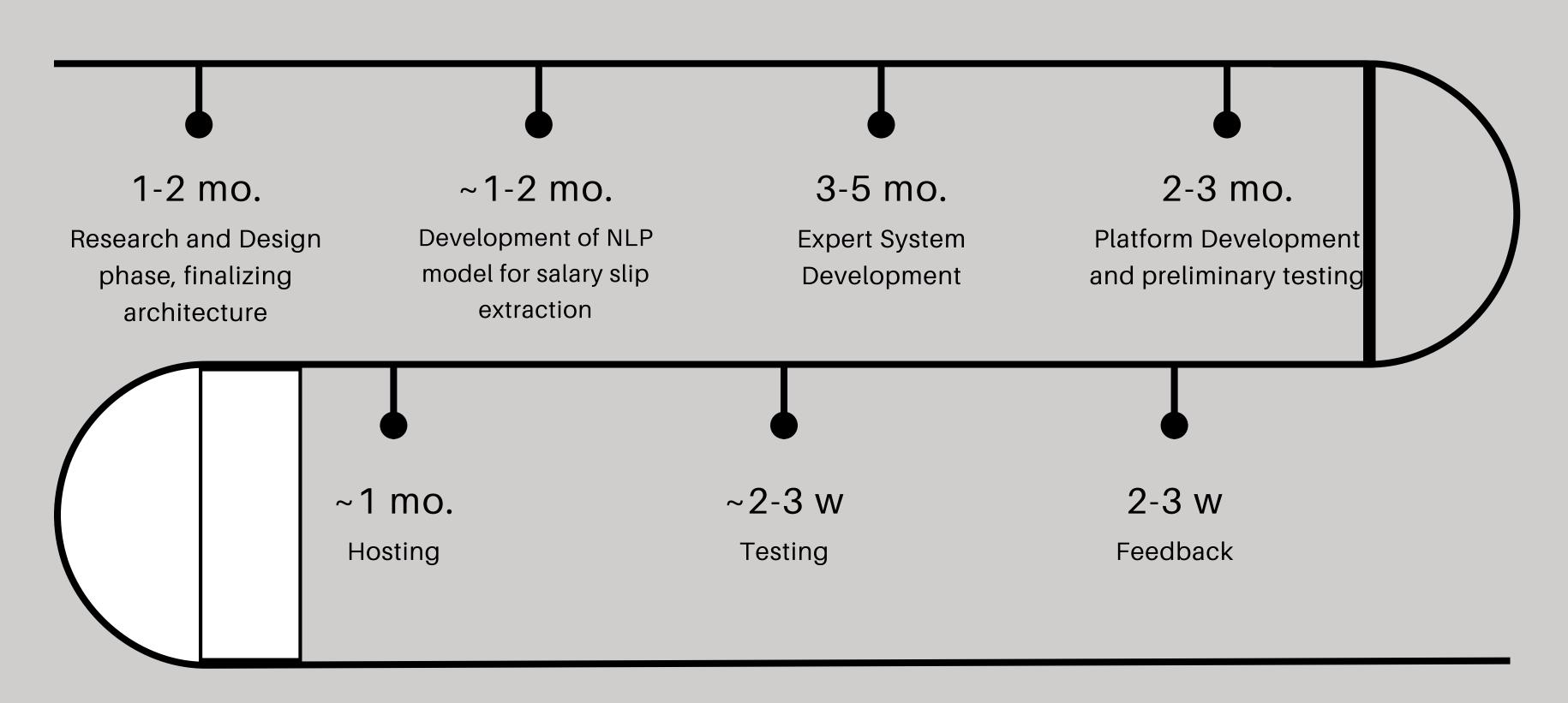
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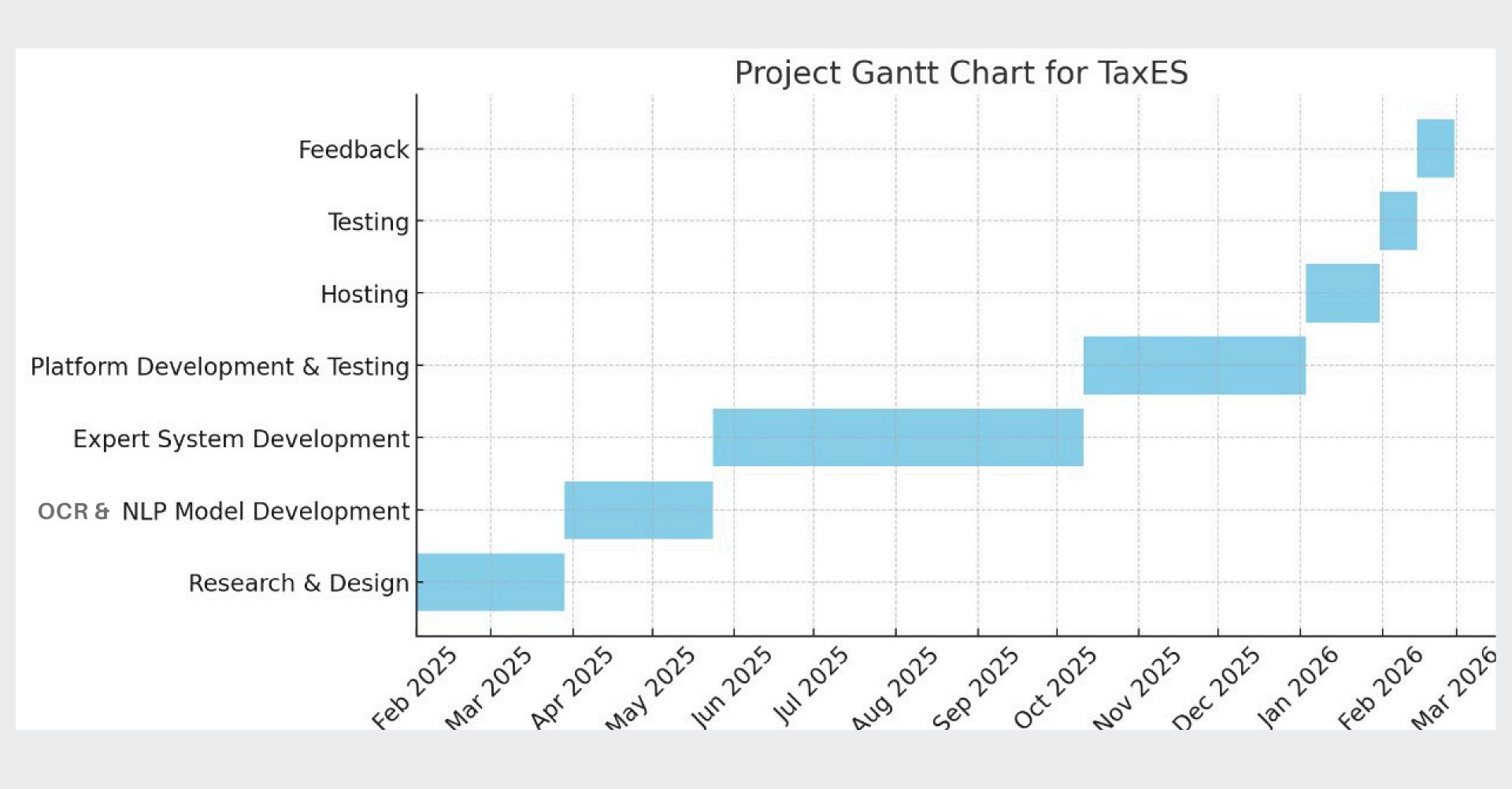
https://github.com/yogeshsahu0582/YSSSP/

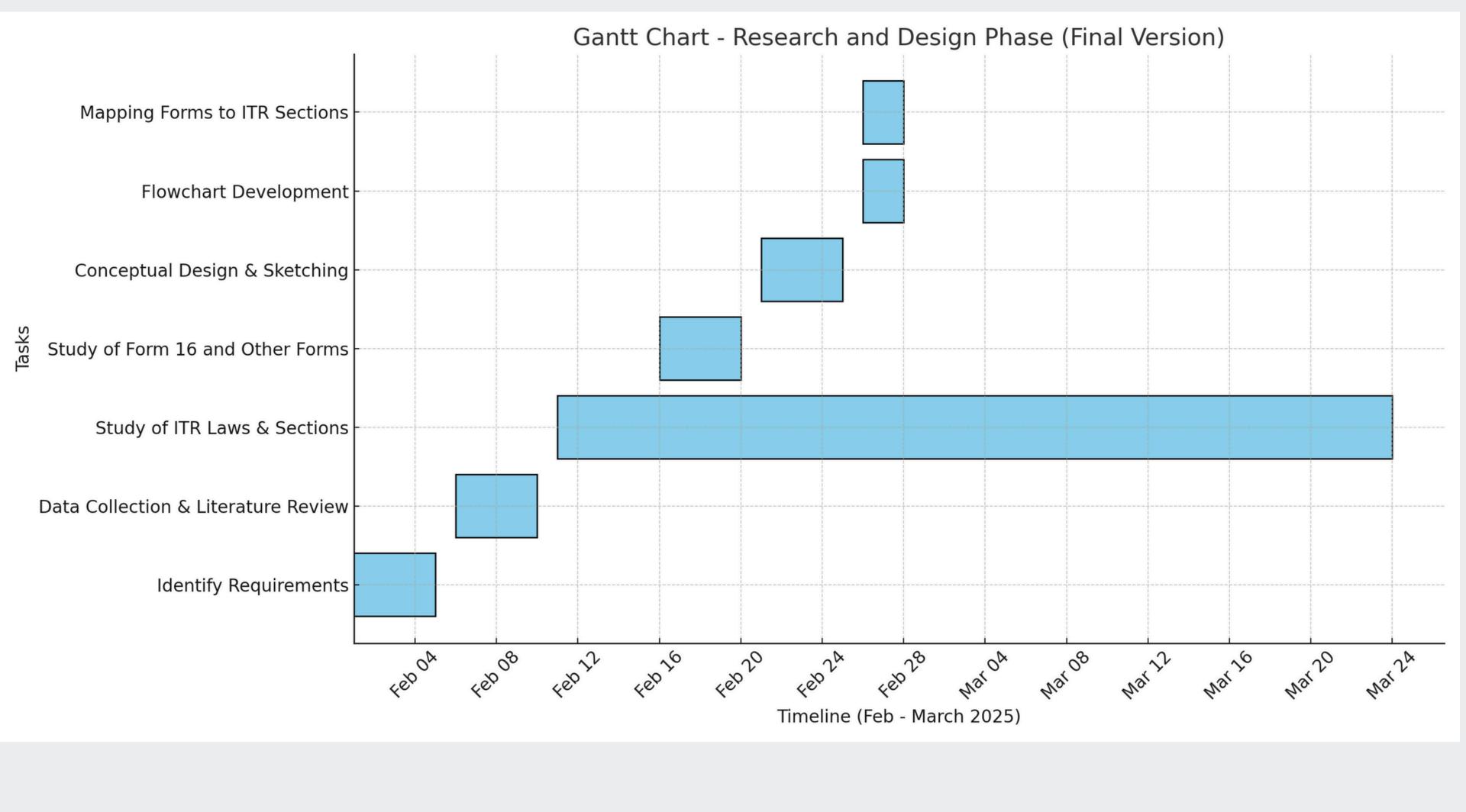
Start **Enter Personal Details(Name, DOB) Enter PAN & Aadhaar Number** Enter Address & Contact Info(Permanent address, email, mobile no) **Provide Bank Account Details** End

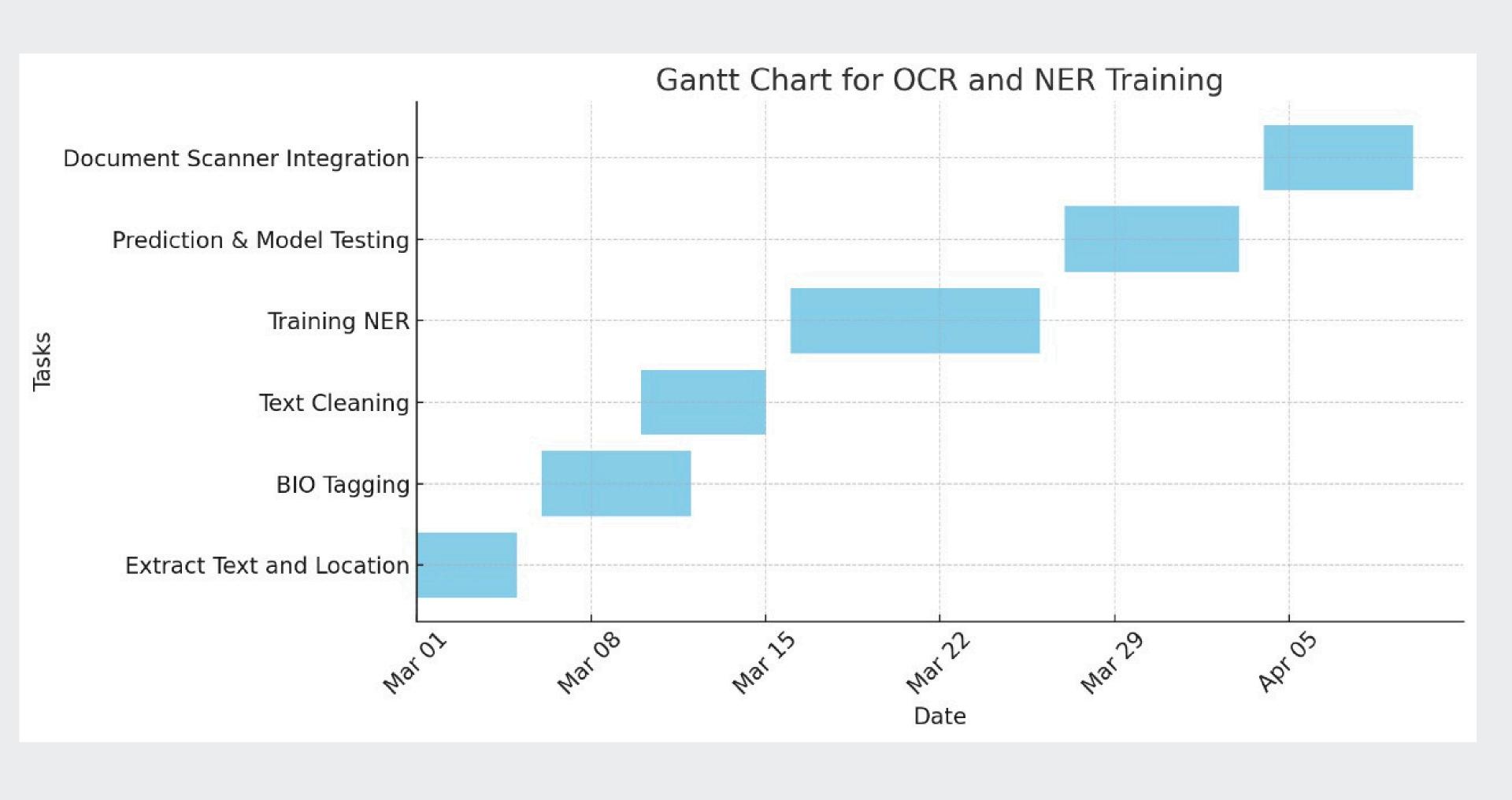
#### **TaxES**

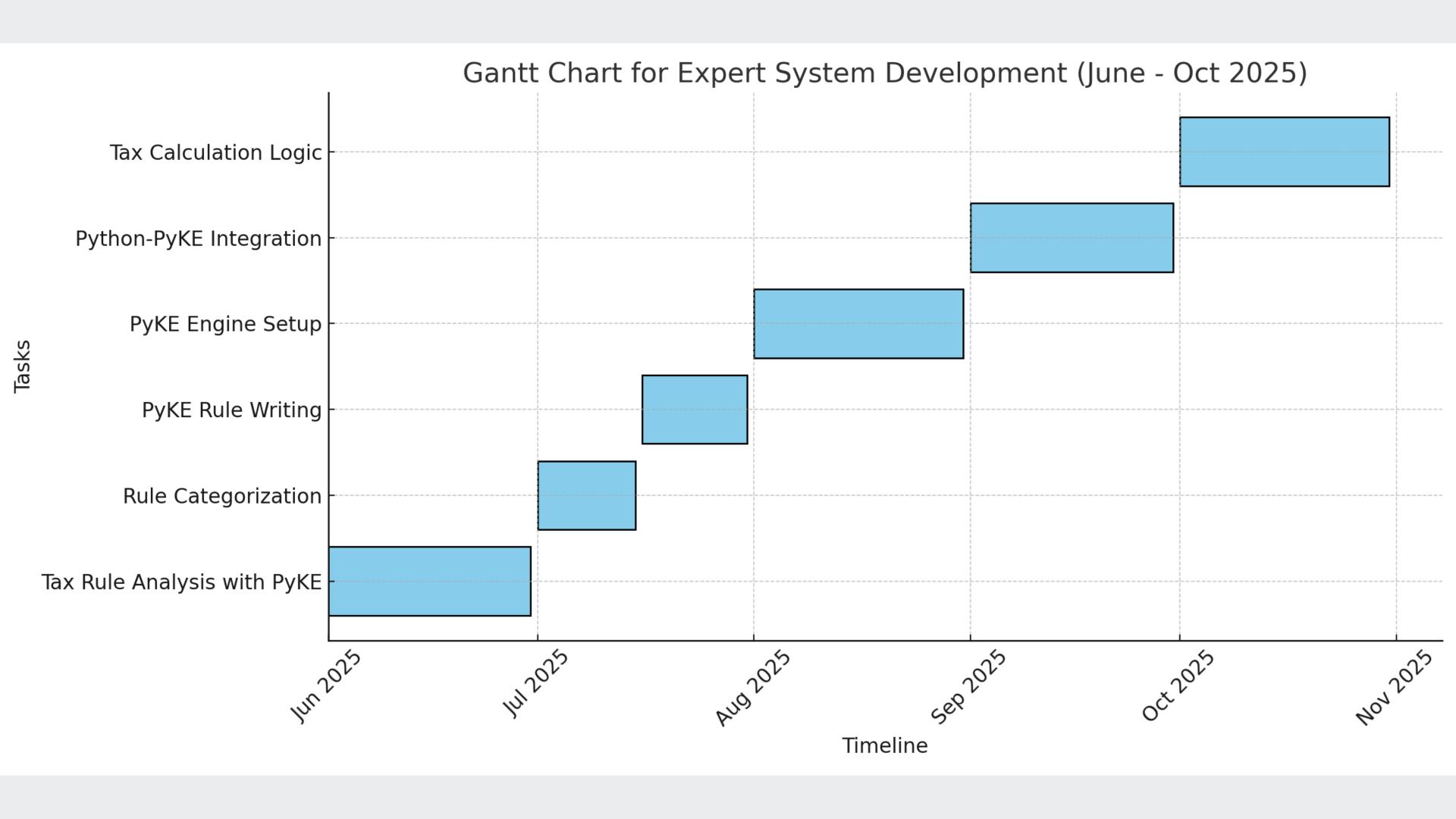
Tentative Project Timeline

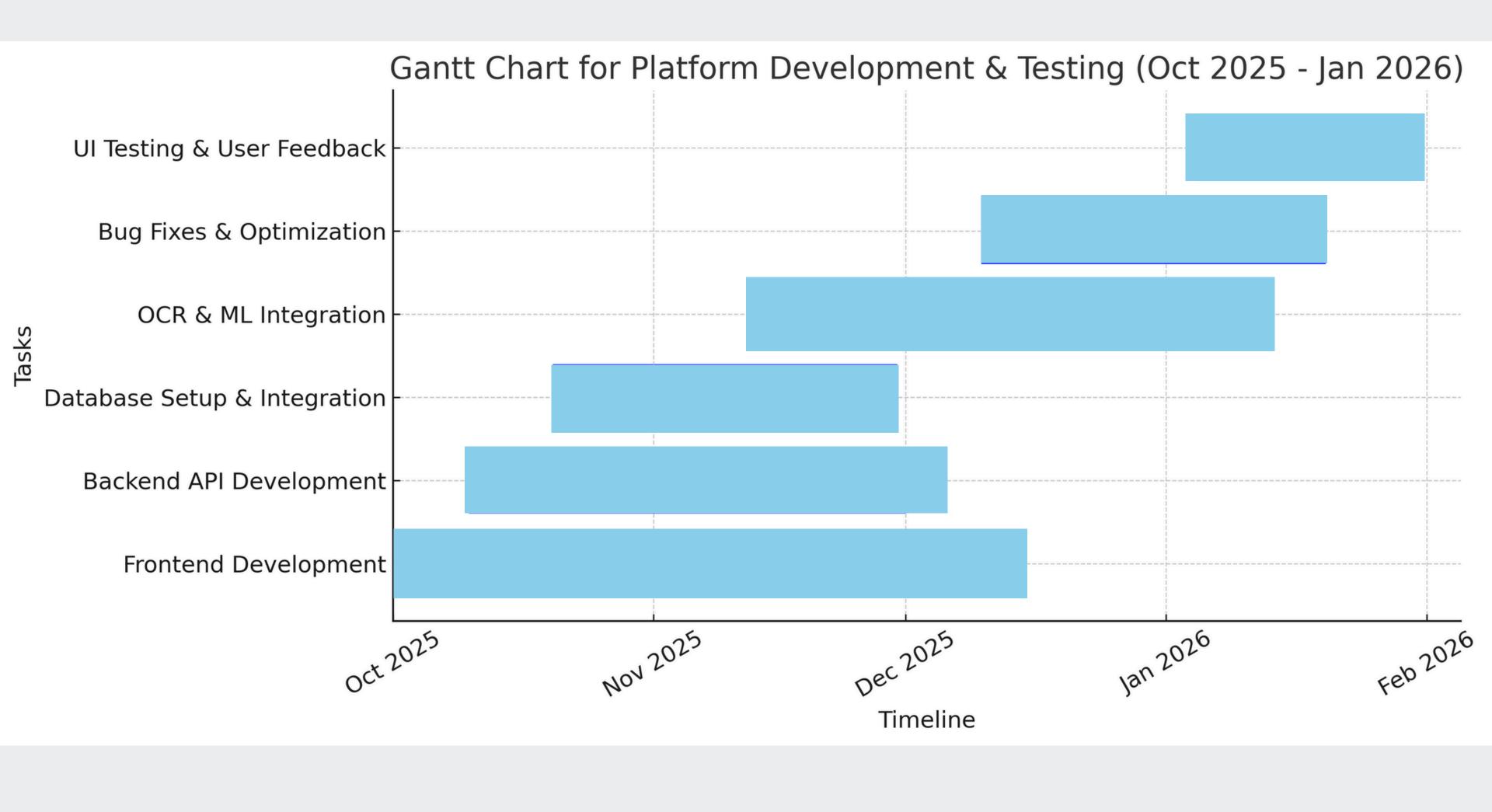












#### Member Assigned For Major Project - TaxES

Module	Start Date	End	Member Assigned
Requirement Gathering & Analysis - Research & Design	Feb-25	Mar-25	Shivank Rai, Stuti Badola, Sameeksha Suryawanshi, Payal Badal
NLP Model Development & OCR	Apr-25	Jun-25	Yogesh Sahu, Shivank Rai, Stuti Badola
Expert System Development	Jul-25	Sep-25	Yogesh Sahu, Stuti Badola, Payal Badal , Shivank Rai
Plateform Development & Testing	Oct-25	Dec-25	Stuti Badola, Sameeksha Suryawanshi, Payal Badal
Hosting & Deployment	Jan-26	Jan-26	Shivak Rai , Yogesh Sahu
Testing	Feb-26	Feb-26	Yogesh Sahu, Shivank Rai, Stuti Badola, Sameeksha Suryawanshi, Payal Badal
Feedback	Mar-26	Mar-26	Yogesh Sahu, Shivank Rai, Stuti Badola, Sameeksha Suryawanshi, Payal Badal

# 

#### **Step 1-Fill in Personal Information**

- ✓ Name, PAN, Aadhaar
- Address, Mobile Number
- Bank Account Details (for tax refund)

#### **Step 2-Enter Income Details**

- ★ Income from Salary (Form 16)
- Employer Name, TAN
- ✓ Gross Salary
- Allowances & Perquisites
- Exemptions (HRA, LTA, etc.)
- ✓ Net Taxable Salary
- Income from House Property (if applicable)
- Enter details if rented out (Rental Income)
- Enter Home Loan Interest (if applicable)
- Income from Other Sources
- ✓ Interest on Savings Account
- ✓ Interest from Fixed Deposits
- Dividend Income
- Exempt Income (if any)
- Agricultural Income (up to ₹5,000)

#### **Step 3-Enter Deductions (Chapter VI-A)**

- **P** Deductions under Section 80C (Max ₹1.5 lakh)
- ✓ PPF, EPF, LIC Premium, ELSS, NPS, etc.
- ★ Other Deductions
- ✓ 80D Health Insurance Premium
- ✓ 80E Education Loan Interest
- 80TTA Savings Account Interest Deduction (₹10,000 max)

#### **Step 4-Compute Tax Liability**

- The system automatically calculates:
- ✓ Gross Total Income
- Deductions Applied
- ✓ Total Taxable Income
- ✓ Tax Payable or Refundable

#### Documents uploaded can be (USE CASES):

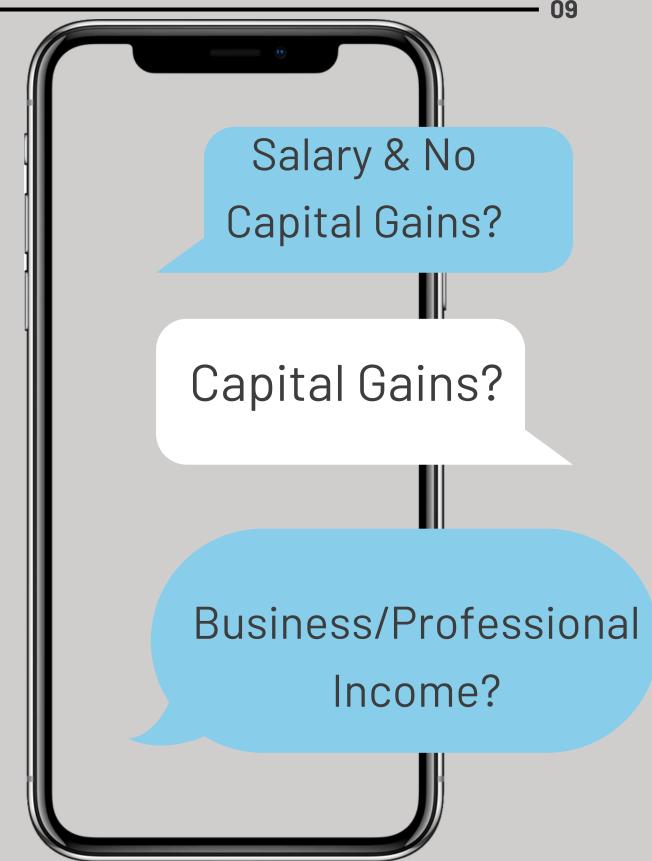
- 1) Form 26AS
- 2) Form 16 (A,B,C)
- 3) Salary pay slips
- 4) Bank Statements
- 5) Proof of tax saving investments
- 6) Form 15G and 15H
- 7) Health Insurance Premium Receipts (80D)
- 8) Proofs of Capital Gains: like stock trading statements, Purchase/Sale deed for the sale of house property, land or building, statements from mutual funds or brokers involved
- 9) Investment proofs claiming tax exemption: Life Insurance policy premiums, Amount invested in ELSS, EPF, PPF, NPS
- 10) Home Loan statements issued by the lender

#### Select ITR Form: -

Salary & No Capital Gains? → ITR-1

Capital Gains? → ITR-2

Business/Professional Income? → ITR-3



# OUTPUT

#### 1. Tax Calculation Summary:

- Total Taxable Income(after deductions and exemptions)
- Total Tax Payable
- Tax Already Paid (TDS from salary slip)
- Net Tax due or Refund Amount

#### 2. Recommended ITR form:

- ITR 1
- ITR 2
- ITR 3
- ITR 4

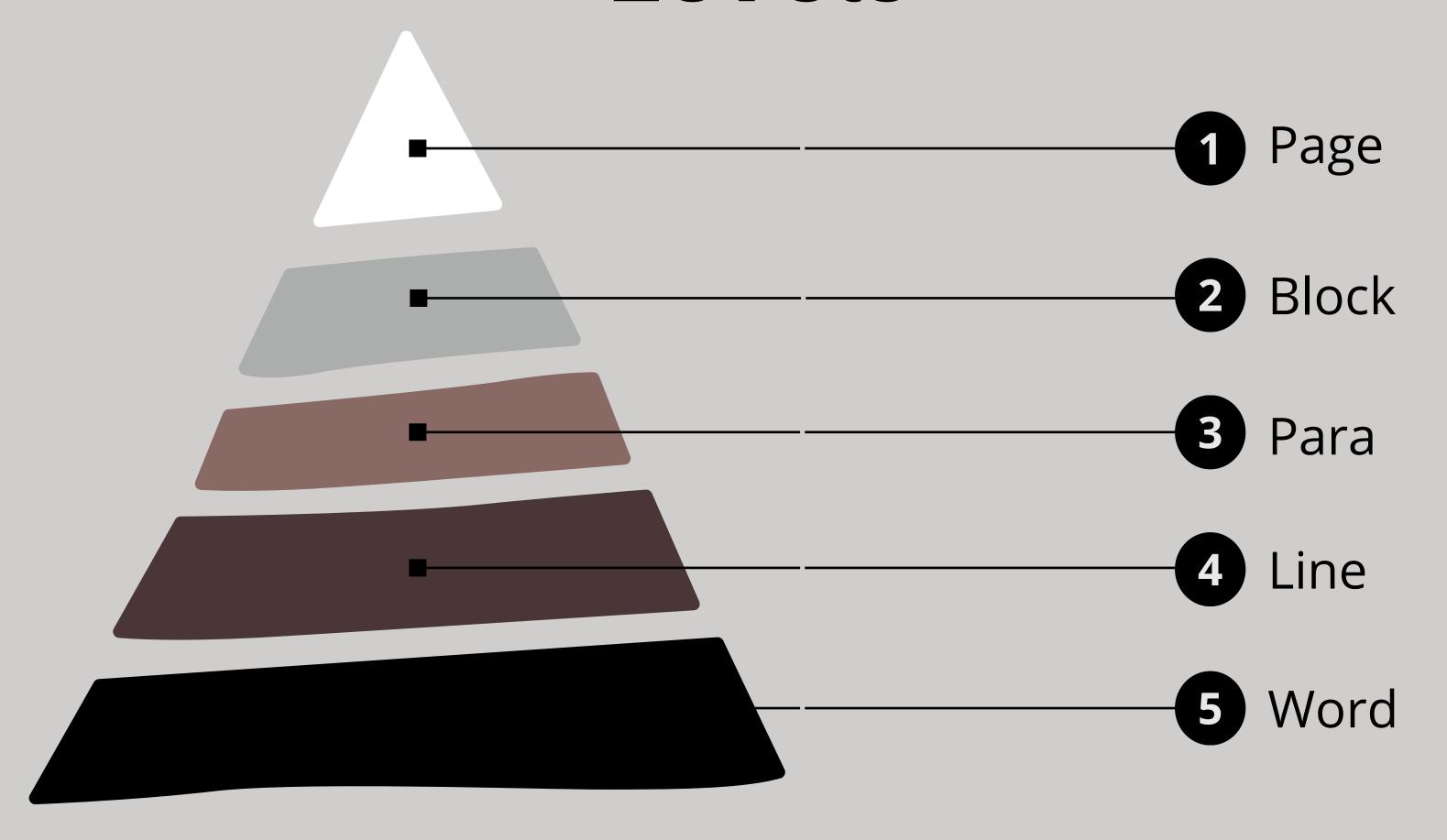
#### 3. Pre-filled ITR form:

- Personal Information
- Income Details
- Deductions and Exemptions
- Bank Details
- Verification Section

### Library/Modules Used:

Category	Technology Used	Purpose	Key Libraries/Models	
OCR (Optical Character Recognition)	Image-to-Text Conversion	Extracts text from scanned tax documents (Form 16, PAN, Aadhaar, Salary Slips).	pytesseract, openCV, EasyOCR, Keras- OCR	
NER (Named Entity Recognition)	NER (Named Entity Recognition)  Classification		spaCy, RegEx, pandas, pickle Hugging Face (BERT)	
Expert System	Rule-Based AI & ML Models	Automates tax calculations, selects ITR type, applies deductions, and optimizes tax filing.	Custom Rules, scikit-learn (Decision Trees), Prolog, Drools (Rule-Based Systems)	

## Levels



## Page

#### [See rule 31[8(e)] PART A Certificate under section 263 of the Income tax Act, 1961 for Tax deducted at source on Salary Name and Address of the Employer Name and Designation of the Employee ABC Company Employee A 91, Mahalaxmi Chambers M G Road Senior Executive Bangalore PAN of the Deductor TAH of the Deductor PAN of the Employee ADCIDE1234F Address : No. 223, TTK Road City : Bangalore Pincode : 560043 1.Apr-2013 31-Mar-2014 Summary of tax deducted at source Receipt Numbers of original statements of Amount Amount of tax TDS under sub-section(3) of section 200 deducted in respect of | deposited / remitted in respect of the employee 1,182,00 Quarter 2 Quarter 2 Quarter 3 Quarter 4 Total 1,182,00 1,182.00 Dotails of Salary paid and any other income and tax deducted 1. Gross Salary 1,24,822,00 a) Salary as per Provisions contained in sec. 17(1) b) Value of perquisites u/s 17(2) (as per Form No.12BA. 44,000.00 wherever applicable) c) Profits in fieu of salary under section 17(3) (as per Form No. 139A, wherever applicable) 10,000.00 1,78,832.00 2. Less: Allowance to the Extent u/s 10 Conveyance Alexance 800.00 40,000.00 Transport Allowance 40,800.00 3. Balances (1-2) 1,38,022.00 4. Deductions Professional Tax (Tax on Employment) 600.00 Aggregate of deductions 600.00 6. Income Chargable under the head 's alaries' (3-5) 1,37,422.00 7. Add: Any other income reported by the employee (-)1,57,500.00 Income From House Property Income From Other Sources 1,05,000.00 Interest on Housing Loan - Self Occupied (152,500.00 8. Gross total income (5+7) 84,922.00 9. Deductions under Chapter VIA (A) Section 80C, 80CCC and 80CCD 15,940,00 § Section 80C Employee Provident Fund (EPF) 8,903.00 Insurance Premium 7,000.00

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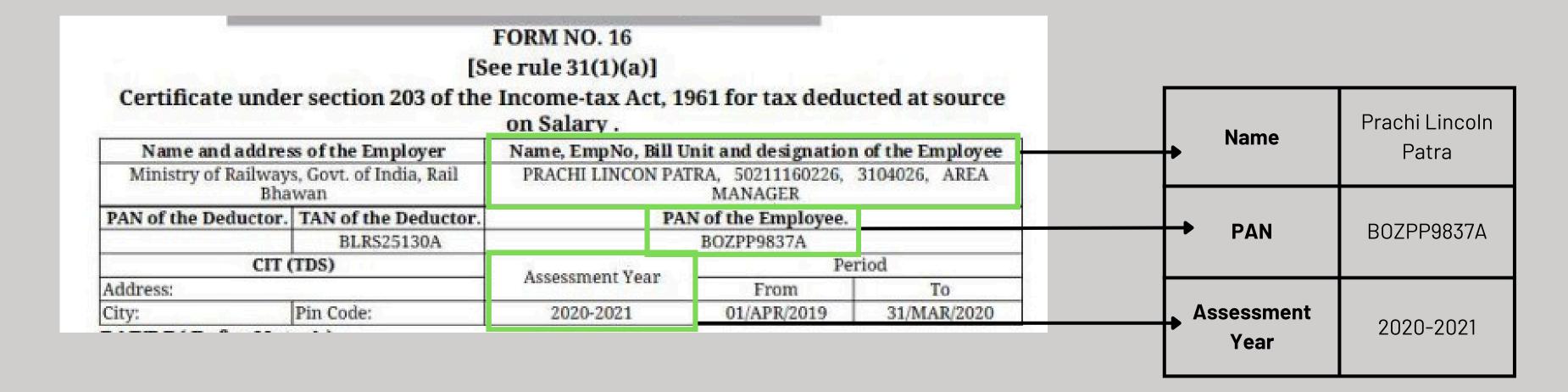
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## Mapping

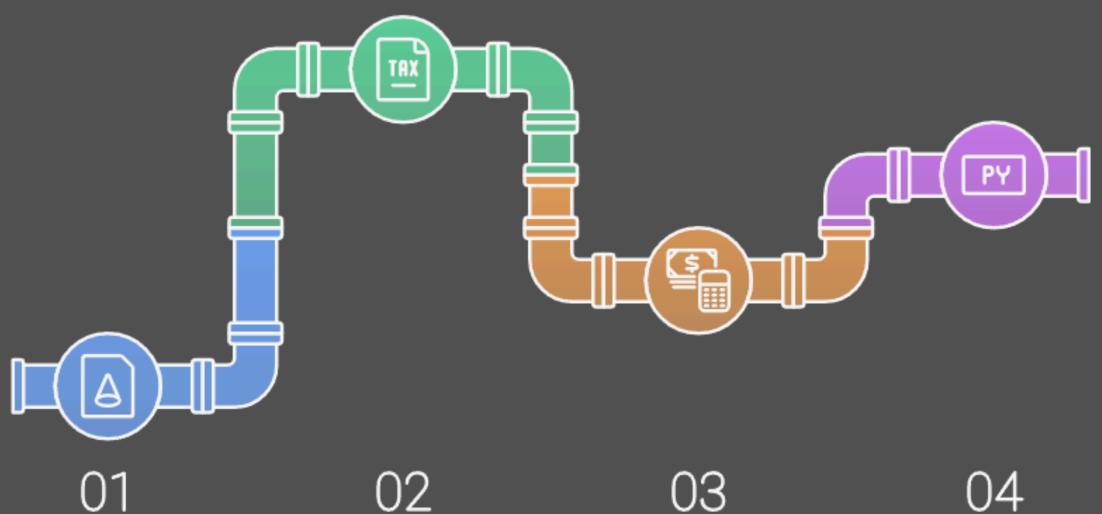
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			40,800.00	
3.	Balances (1-2)			1,38,022.00
4.	Deductions			
	Professional Tax (Tax on Employment)	600.00		
5.	Aggregate of deductions		600.00	
6.	Income Chargable under the head 's alaries' (3-5)			1,37,422.00
7.	Add: Any other income reported by the employee			
	Income From House Property	(-)1,57,500.00		
	Income From Other Sources	1,05,000.00		
1	Interest on Housing Loan - Self Occupied			
			(-)52,500.00	
8.	Gross total income (6+7)			84,922.00
9.	Deductions under Chapter VIA (A) Section 80C, 80CCC and 80CCD			
	i) Section 80C		15,903.00	
	Employee Provident Fund (EPF)	8,903.00		
	Insurance Premium	7,000.00		

# NER using spaCy

#### Development of Tax Calculation Expert System



#### **Define Facts**

Extract and structure input data into PyKE facts

#### **Encode Tax** Rules

Write knowledge rule bases for tax calculations

#### **Use Inference Engine**

Apply rules iteratively to compute tax liability

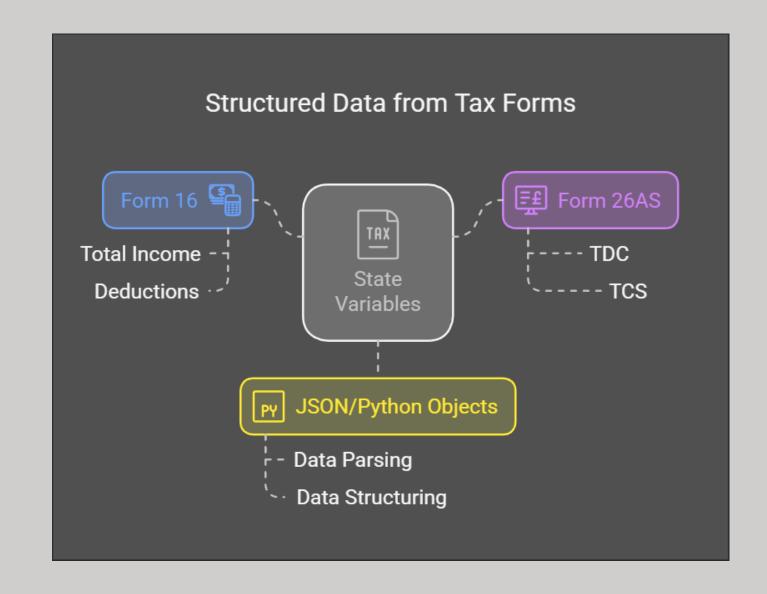
#### Integration

Embed PyKE in Python for input and output processing

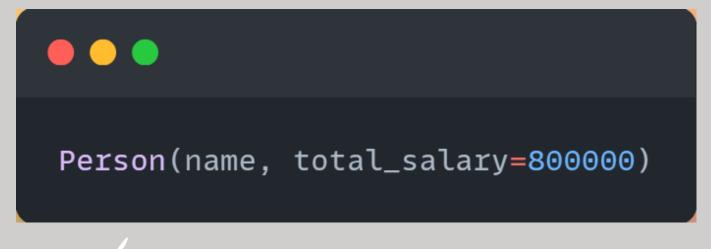
#### Expert System: Rule Engine and Knowledge Base creation

#### 1. Facts or statements:

First we will create facts/statements from the state variables (like total income, deductions, HRA allowance, etc.). These state variables will be acquired from the parsing of Form 16, Form 26AS, etc. and output as structured JSON/Python objects.



#### For example:-



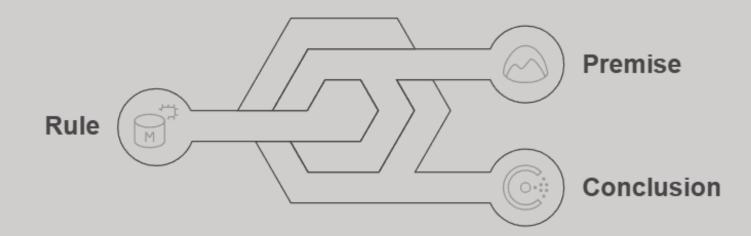


#### Expert System: Rule Engine and Knowledge Base creation

#### 2. Rules:

Rules in PyKE define logic that can be applied to facts(or state variables), typically with an "if-then" structure where the "if" part is termed as premise and the "then" part as conclusion.

#### **PyKE Rule Structure**



Unit Test: Validate rules with sample inputs (e.g., ₹8L income with ₹1.5L 80C deduction).

#### For example:-

```
# tax_slabs.krb
rule calculate_tax_slab:
    IF taxable_income($income) AND $income 
    THEN tax_amount(0)
```

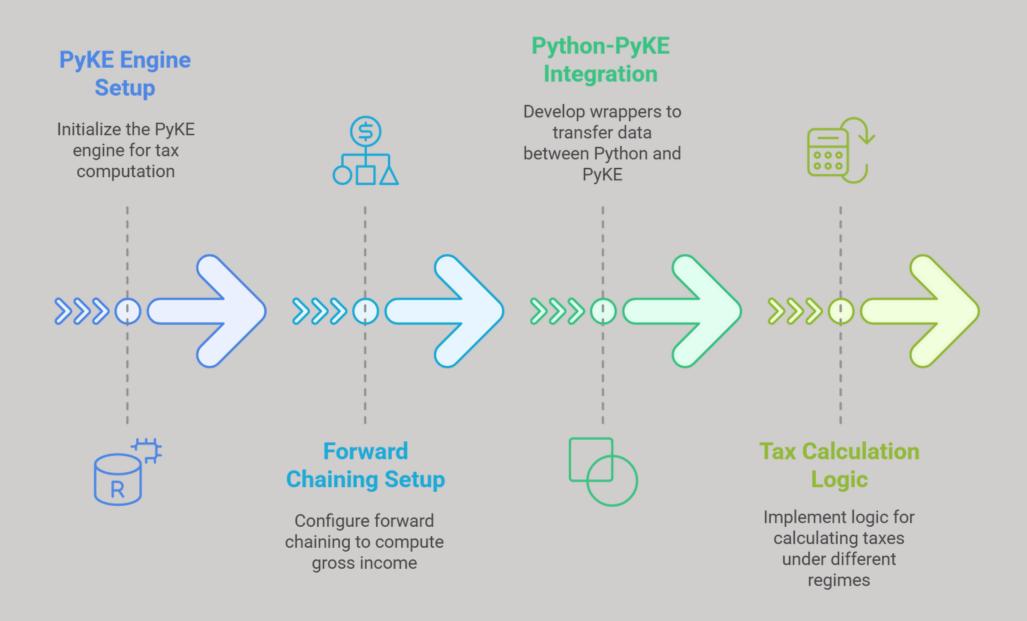
Rule Base stores rules in the form of (.krb) file

#### Expert System: Rule Engine and Knowledge Base creation

#### 3. Core Engine Development: (Inference Engine)

Build the PyKE inference engine and integrate with Python.

Core Engine Development



## Proof of Concept & Feasibility Highlights

- Data Collection & OCR Extraction
- Concept: Users upload income-related documents, OCR extracts text.
- Feasibility: Tesseract OCR, Google Vision API, AWS Textract for structured/unstructured data.
- Data Preprocessing & Validation
- Concept: Clean, format, and validate extracted data via APIs (PAN, Aadhaar).
- Feasibility: NLP for text cleaning, government APIs for verification, cross-checking figures.
- Al-Based Classification & Auto-Fill
- Concept: ML models classify income, deductions & auto-fill ITR fields.
- Feasibility: Supervised learning for classification, rule-based tax-saving suggestions.
- ITR Type Selection (Auto-Suggestion)
- Concept: Suggests ITR form (ITR-1 to ITR-4) based on income sources.
- Feasibility: Decision tree logic, Al-based recommendations.

## Proof of Concept & Feasibility Highlights

- Tax Calculation & Optimization
- Concept: Computes taxable income, applies deductions, selects the best tax regime.
- Feasibility: Rule-based tax calculations, Old vs. New regime comparison.
- Filing & E-Verification
- Concept: Auto-fills ITR, allows review, submits electronically with e-verification.
- Feasibility: Tax portal API/RPA automation, Aadhaar OTP, Net Banking verification.
- Completed ITR Filing & Acknowledgment
- ITR submission proof generated for records.
- PDF acknowledgment receipt for future reference.

# Thank you!