

# FinTech Robo-Advisor: Retirement Planning Calculator

## Project Overview

Retirement planning is complex due to inflation, longevity risk, and uncertain market returns. Retail investors often struggle to translate long-term savings goals into actionable monthly investment plans. This project simulates a digital Robo-Advisor that delivers an end-to-end, data-driven retirement roadmap.

## Objectives

- Calculate an inflation-adjusted retirement corpus
- Estimate the monthly SIP required to bridge the retirement savings gap
- Deliver financially accurate, real-time results through a web-based interface

## Financial Methodology (High Level)

The financial logic focuses on real purchasing power rather than nominal values. Post-retirement returns are adjusted for inflation to ensure sustainability of withdrawals over long horizons.

The model estimates the present value of retirement expenses, projects the future value of current savings, and computes the systematic investment required to close the funding gap using standard annuity logic.

## Model Development & Validation Process

The financial logic was first structured and validated in Excel to ensure conceptual and numerical accuracy.

AI-assisted tools were then used to translate the validated financial logic into executable code. The generated code was iteratively refined, tested, and manually adjusted to eliminate rounding inconsistencies and ensure output parity with Excel benchmarks.

Final validation was performed through repeated scenario testing to confirm accuracy and stability of results.

## Precision Engineering Insight

A floating-point precision mismatch was identified between Excel and JavaScript outputs. This variance was resolved by eliminating intermediate rounding and improving numerical handling, achieving approximately 99.99% parity with Excel-based financial models.

## Product Thinking & Deployment

The application was developed iteratively, progressing from financial logic validation to UI implementation, mobile optimization, precision correction, and deployment stabilization. The final solution was refactored into a single-file architecture to improve reliability and maintainability.

## End Result

The final output is a fully responsive Robo-Advisor that functions seamlessly across devices and provides instant SIP recommendations based on user inputs.

## Retirement Calculator

Plan your financial future

Current Age

24

Retirement Age

60

Life Expectancy

85

Current Monthly Expenses (₹)

30000

Inflation Rate (%)

7

Existing Savings Corpus (₹)

500000

Pre-Retirement Return (%)

14

Post-Retirement Return (%)

08

Calculate

### Target Corpus

Amount needed for retirement

₹9,16,55,910

### Projected Savings

Your existing savings will grow to

₹5,59,17,102

### Monthly SIP

Required monthly investment

₹2,798

### Retirement Progress

Visual comparison of target vs projected savings

Target Corpus



₹9,16,55,910

Projected Savings



₹5,59,17,102

### You're on track!

You need an additional ₹3,57,38,808 to reach your retirement goal.

So, this Robo Advisor that I have made which is compatible with both Laptop/Desktop as well as Smartphones.