

Employee Attrition Analysis

Group No: 2

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CMPE 331 Interim Report

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Employee Attrition Prediction

Progress

- CORS (Cross-Origin Resource Sharing) was configured for the Flask API.
- “File corrupted” bug was fixed for excel upload API.
- Java Spring project was integrated for the back-end of register and login process.
- A pie chart was designed for the attrition percentage aspect on front-end.
- Pages of the web application was designed.

Successfully Predicted and Downloaded...

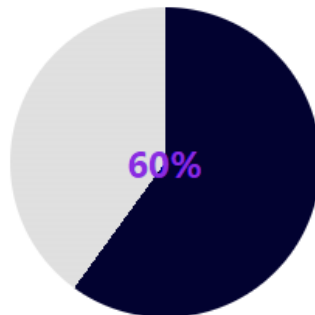


Figure 1: Attrition Levels Visualization

This figure illustrates a dynamic representation of attrition levels sourced from user-uploaded data. The data is processed and depicted both as a pie chart and a corresponding percentage on the website. The chart provides a visual breakdown of attrition categories, offering stakeholders an accessible and insightful overview of the attrition distribution.

Works Completed

- A machine learning model was developed.
- Flask API was developed.
- Java Spring API was developed.
- A front-end template was designed.
- Front-end was made suitable for usage.
- APIs were integrated to the front-end.

The image displays two user interface forms side-by-side. The left form is titled 'Register' and contains four input fields labeled 'Name:', 'Surname:', 'Email:', and 'Password:'. Below these fields is a blue button labeled 'Register'. The right form is titled 'Login' and contains two input fields labeled 'Email:' and 'Password:'. Below these fields is a blue button labeled 'Login'. Both forms have a dark blue background and white text.

Figure 2: User Registration and Login Interfaces

This figure encapsulates the user interaction process, featuring both the user registration and login interfaces. The registration interface (left) facilitates account creation with a user-friendly design, while the login interface (right) provides registered users with secure access to the site. Together, these interfaces contribute to an intuitive and accessible user experience.

Please ensure your Excel and CSV files adhere to the following format: [Name, Surname, Age, Business Travel, Daily Rate, Department, Distance From Home, Education, Education Field, Employee Number, Environment Satisfaction, Gender, Hourly Rate, Job Involvement, Job Level, Job Role, Job Satisfaction, Marital Status, Monthly Income, Monthly Rate, Number of Companies Worked, Over Time, Percent Salary Hike, Performance Rating, Relationship Satisfaction, Stock Option Level, Total Working Years, Training Time Last Year, Work Life Balance, Years At Company, Years In Current Role, Years Since Last Promotion, Years With Current Manager]

CSV Upload

Browse

Upload

Excel Upload

Browse

Upload

Figure 4: File Upload Interface for Attrition Data

This figure illustrates the file upload interface, featuring two distinct boxes allowing users to seamlessly upload CSV and Excel files containing attrition data. Users can utilize the browse section to search for files with the specified format, either CSV or Excel. The system facilitates a straightforward file upload process, enabling users to contribute data effortlessly for further analysis.

Information: The accepted file formats attributes for attrition data are clearly indicated at the top of the page.

Works In Progress

- The machine learning model is being further more optimized to achieve better scores.
- A details page is being designed for the users. Example file formats for appropriate file input and their explanation will be included.

FILE FORMAT DETAILS

Please ensure that the files you upload adhere to the following format. Each attribute should be correctly filled to ensure accurate processing.

Accepted File Formats: Excel, CSV

The Attributes In Order: Name, Surname, Age, Business Travel, Daily Rate, Department, Distance From Home, Education, Education Field, Employee Number, Environment Satisfaction, Gender, Hourly Rate, Job Involvement, Job Level, Job Role, Job Satisfaction, Marital Status, Monthly Income, Monthly Rate, Number of Companies Worked, Over Time, Percent Salary Hike, Performance Rating, Relationship Satisfaction, Stock Option Level, Total Working Years, Training Time Last Year, Work Life Balance, Years At Company, Years In Current Role, Years Since Last Promotion, Years With Current Manager

Accepted Inputs For The Specified Attributes:

- Bussines Travel: Rare, Frequently
- Education: Below College, College, Bachelor, Master, Doctor
- Environment Satisfaction: Low, Medium, High, Very High
- Job Involvement: Low, Medium, High, Very High
- Job Satisfaction: Low, Medium, High, Very High
- Performance Rating: Low, Good, Excellent, Outstanding
- Relationship Satisfaction: Low, Medium, High, Very High
- Work Life Balance: Bad, Good, Better, Best

Figure 5: Detailed Information Page for File Format Guidance

This figure presents a screenshot capturing the comprehensive information page detailing file format guidelines for uploading attrition data. The page provides users with crucial insights, specifying the accepted file types (CSV and Excel), the precise order for entering attributes, and specific inputs recommended for various attributes. This detailed guidance ensures users have a clear understanding of the required format, promoting accurate and efficient data uploads.

Works To Be Done

- A password pattern will be included in the Java Spring API.
- Python project will be refactored for a cleaner code.
- The possible outcomes will be tested manually.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ				
	Age	Business Traj	Daily Rate	Department	Experience From	Education	Location	Employee Number	Salary	Gender	Hourly Rate	Involvement	Job Level	Job Role	Satisfaction	Barriers	Statistical	Monthly Income	Monthly Rate	Company	Over Time	Element	Salary	Performance	Relationship	Satisfaction	Options	Working	Life	Life	Barriers	At Comp	In Current	Previous	Current	Attribution	Name	Surname	% Attribution
0	41	1	1102	Sales	2	2	1	1	2	Male	94	3	2	0	4	0	5993	19479	8	1	11	3	1	0	8	0	1	6	4	0	5	0	Kubilay	Kürtür	8,333333				
1	49	2	279	Research	8	1	1	2	3	Male	61	2	2	1	2	1	5130	24907	1	0	23	4	4	1	10	3	3	10	7	1	7	0	Ahmet	Bilal					
2	37	1	1373	Research	2	2	0	4	4	Male	92	2	1	2	3	0	2090	2396	6	1	15	3	2	0	7	3	3	0	0	0	0	1	Ferda	Peri					
3	33	2	1392	Research	3	4	1	5	4	Male	56	3	1	1	3	1	2909	23159	1	1	11	3	3	0	8	3	3	8	7	3	0	0	Mehmet	Demir					
4	27	1	591	Research	2	1	2	7	1	Male	40	3	1	2	2	1	3468	16632	9	0	12	3	4	1	6	3	3	2	2	2	2	0	Vijit	Soy					
5	32	2	1005	Research	2	2	1	8	4	Male	79	3	1	2	4	0	3068	11864	0	0	13	3	3	0	8	2	2	7	7	3	6	0	Efe	Uz					
6	59	1	1324	Research	3	3	2	10	3	Female	81	4	1	2	1	1	2670	9964	4	1	20	4	1	3	12	3	2	1	0	0	0	0	Melissa	Çimen					
7	30	1	1358	Research	24	1	1	11	4	Male	67	3	1	2	3	2	2693	13335	1	0	22	4	2	1	1	2	3	1	0	0	0	0	Fatih	Mehmet					
8	38	2	216	Research	23	3	1	12	4	Male	44	2	3	3	3	0	9526	8787	0	0	21	4	2	0	10	2	3	9	7	1	8	0	Mustafa	Koçan					
9	36	1	1299	Research	27	3	2	13	3	Male	94	3	2	4	3	1	5237	16577	6	0	13	3	2	2	17	3	2	7	7	7	7	0	Said	Gan					
10	35	1	809	Research	16	3	2	14	1	Female	84	4	1	2	2	1	2426	16479	0	0	13	3	3	1	6	5	3	5	4	0	3	0	Zeynep	Hal					
11	29	1	153	Research	15	2	1	15	4	Female	49	2	2	2	3	0	4193	12682	0	1	12	3	4	0	10	3	3	9	5	0	8	0	İrem	Dağ					

Figure 6: System Verification - Attrition Excel File

This figure displays of an attrition Excel file used for system verification. The captured image serves as a confirmation that the system is processing and handling data correctly. The Excel file showcases the organized structure of attrition data, reinforcing the system's effective functionality in interpreting and managing the provided information.