Machine Learning Interview Project: Wombus World

Background:

A popular exercise in Artificial Intelligence is the Wumpus World, inspired by the video game *Hunt the Wumpus* by Gregory Yob in 1973. Wumpus World serves as an introduction to knowledge-based agents and knowledge representation. In the scenario, the agent is trying to navigate a series of rooms to reach its target—gold—while avoiding pits and being eaten by Wombi (the assumed plural of Wumpus).

After millions of years of evolution, the Wumpus have evolved into the far superior Wombus. These Wombi are extremely data-oriented creatures and meticulously track their skills and preferences, far exceeding the accuracy of traditional resumes. By becoming knowledge-based agents themselves, they have sensed a great opportunity at Devsinc. After flocking to our careers website, the Wombi have used their actuators to apply for jobs across the various industries Devsinc operates in.

Recruiting is overwhelmed—they simply cannot process the sheer number of applications and need your help to screen the candidates. Recruiting has already sent over a spreadsheet that one of their interns prepared, which contains all current candidates as well as a historical record of previous candidates and their most recent performance scores.

Unfortunately, the intern spilled iced mocha all over their workstation before sending us the data files. As a result, the files have become corrupted. The data is still accurate, so assume no noise has been added to the dataset; however, some of the data has been lost.

Objectives:

Note: Python should be the main programming language for this solution.

Model Development:

- Build a predictive model using the provided data to estimate the ‘score’ of Wombi candidates.
- Focus on model performance while also considering computational efficiency, given the expected scale of Wombi applications (over 1 million per day).

Model Deployment:

- More importantly, explain how you would deploy such a model. You do not actually need to deploy it, but describe how your deployment would handle the expected load.
- Some considerations: CI/CD pipelines, model testing, monitoring, data storage, load balancing, and performance optimization.

- You may choose any framework or cloud service to describe your hypothetical deployment.

Deliverables:

- Zip the code files along with a README and email it to talha.jamil@devsinc.com with the subject: **Machine Learning Assessment_<Candidate Name>**

Attached Files:

1. **wombi_candidates.csv** – List of candidates recruiting needs help prioritizing.
2. **wombi_employees.csv** – List of current or former employees with their most recent performance scores appended.

Schema of attached Files:

Data Dictionary

Attribute Name	Description	Data Type
wombus_id	ID number assigned to the Wombus	int
birth_continent	Continent Wombus was born on	string
gender	Male/Female designation for Wombus	string
age	Age of Wombus (in years)	int
college_degree	Whether or not the Wombus holds a college degree	bool
problem_solving_skill	Measurement of a Wombus's ability to problem solve on a scale of 30 (worst) to 1 (best)	float
technology_skill	Measurement of a Wombus's technological ability on a scale of 40 (worst) to 1 (best)	float
english_skill	Measurement of a Wombus's English ability on a scale of 0 (worst) to 10 (best)	float
most_recent_income	Amount of money in WombiCoin (a Wombus cryptocurrency) paid annually at last job	string
total_jobs	Total number of jobs the Wombus has had	int
shirt_color_preference	Which color of [redacted] t-shirt the Wombus requested in their application (company swag is important)	string
customer_exp_preference	Strong Agree to Strongly Disagree response for providing superior customer experiences	string
work_env_preference	Strong Agree to Strongly Disagree response for creating an awesome work environment	string
personal_growth_preference	Strong Agree to Strongly Disagree response for pursuing opportunities for growth	string
honest_communication_preference	Strong Agree to Strongly Disagree response for communicating openly and honestly	string
community_service_preference	Strong Agree to Strongly Disagree response for giving back to the communities in which we live and work	string
remote_work_preference	Preference of working Remote, On-Site, or Hybrid (both remote and on-site)	string
Industry_preference	Preference of working in one of the following industries: Tech, Finance, Renewable Energy, Higher Education, and Telecommunications	string
score	Performance score from the Wombus's most recent review - only present in the employee file	float