PFE
BOOK

24-25

Piva Software
Innovative Solutions

SUMMARY

Providing Solutions to Help Business Grow

- Embedded software development.
- Fixing bugs, detecting anomalies and code review.
- Network management solutions based on tr 069 tr 369
- Computer vision solution for anomaly detection

Who We Are

PIVA Software delivers Embedded and AI Software, IoT and Quality Assurance software development and services to leading OEM, CPE equipment manufacturers, solution providers, ICT company, Set top box & Iptv equipment manufacturers, broadband access solutions providers,

We are a leading technology company providing also professional Software consultancy services to the IT industry.

Why Choose Us

+17 years in the field of software development

Consulting Expertise

+400 successfully accomplished projects

+80 customers arround the world

Software developement

- Board Support Package (BSP)
- Firmware development
- Creating Linux and Android distributions kits for target platforms
- Design and development of user interfaces
- Android developemnt
- Development of Open Source Solution
- Development of Network management Solutions
- AI Software Development

Outsourcing Services

- **Resources allocation**
- **Consultancy services**

PFE INTERNSHIPS PROCEDURES

Hiring steps :

- Application before the 30th of November as a deadline. All candidatures should be sent to HR@pivasoftware.com with mention to the desired topic.
- Selection of potential candidates and calling for technical and HR interviews.
- Final selection after technical interviews.
- Informing all the seleteced trainees about starting dates.

Note:

- If you are interested in two or more topics you can mention that in your emails.

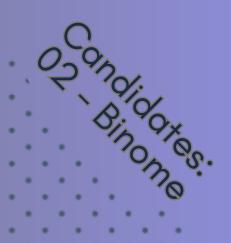# Smart WiFi Network Optimization using Reinforcement Learning

Objectives :

To develop a reinforcement learning (RL) model that dynamically adjusts WiFi channel and bandwidth allocation to enhance network performance and reduce interference.

Technology:

- Python, TensorFlow/PyTorch, OpenAI Gym, SQL/NoSQL.

Required Tasks:

- Build and test a simulation environment.
- Gather network performance data (logs, channel statistics).
- Train and validate the RL model using metrics like signal strength and user density.
- Deploy and integrate the model within a WiFi network for real-time testing.

Candidates: 02 - Binome

Predictive Maintenance for WiFi Infrastructure

Objectives :

Create a predictive maintenance model to anticipate and prevent network issues by analyzing historical diagnostic data.

Technology:

- Python, Scikit-learn, TensorFlow/PyTorch, SQL/NoSQL.

Candidates: 02-Binome

Required Tasks:

- Process maintenance and diagnostic data to extract features.
- Train a predictive model to forecast potential failures or signal drops.
- Implement a system to trigger alerts for proactive maintenance actions.

Intelligent Customer Support Chatbot for WiFi Optimization Assistance

Objectives :

Develop a conversational AI chatbot to assist users in troubleshooting and optimizing WiFi settings in real-time.

Technology:

- Python, Rasa/Dialogflow, OpenAI's API, conversational datasets.

Candidates: 02-Binome

Required Tasks:

- Define and train conversational flows for troubleshooting.
- Train the chatbot to recognize intents and answer common user queries.
- Integrate the chatbot with network diagnostics for dynamic, real-time responses.

Integration of TR-069 client stack into FreeRTOS system.

Technology: C/ FreeRTOS /Networking knowledge (TCP/IP/HTPP/TR-069).

Candidates: 02-Binome

Required Tasks:

- Prepare the FreeRTOS environment.
- Adapt the system design of the T0-69 client stack with the FreeRTOS system
- Integration of the TR-069 client stack.

Technical analyze for available Gateway management solutions

Technology: Linux / C /OpenWRT system / TR-069

Candidates: 02-Binome

Required Tasks:

- Identify the different Gateways management solutions available in the market.
- Running the identified Gateways management solutions.
- Check and analyze the global performance of each identified solution.

Design and development of a modern and secure HR management application.

Technology:

ReactJS ; JIRA API ; NestJS ; MongoDB Keycloak or Firebase ; ReactJS, Javascript, Security mechanism.

Required Tasks:

- Defining and design of the application architecture.
- Development of the Front-end and Back-end of the different application
- modules.
- Integration of security mechanism.
- Test and final deployment

Candidates: 02-Binome

Design and development of a Data scrapping tool with AI technologies.

Technology:

- **FastAPI** :for building the backend API and managing data access.

- **Python** : for web scraping, AI-based data analysis, and integration with FastAPI.

Candidates: 02-Binome

Required Tasks:

- Development of Web Scraping and Data Management Module:
1. Build a Python-based web scraper for collecting data.
2. Implement data cleaning, storage, and compliance with ethical standards.

- AI Data Analysis Module:
1. Use Python to apply AI models for data analysis (e.g., sentiment analysis, image recognition, trend detection).
2. Integrate AI insights into the system backend for user access.

- API and User Interface Development:
1. Develop an API using FastAPI to handle data requests and serve AI insights.
2. Create a user-friendly dashboard for data visualization and interaction.

CONTACT US

📞 Phone : (+216) 74 611 029

✉ Hr@pivasoftware.com

🌐 https://www.pivasoftware.com