

# PFFEBOOK

2023

2024



**COMPANY** OVERVIEW

01

**PROJECT** LIST

02

**HOW TO** APPLY

30

**CONTACT** US

31

# COMPANY OVERVIEW

## ABOUT US

At **Primatec**, we have skilled, dynamic engineers united by a common vision to shape the future.

Our passion is in delivering cutting-edge, cost-effective, and reliable hardware and software solutions tailored to revolutionize ECU testing and development standards in the automotive industry.

## PRIMATEC AT A GLANCE

**+10 years**

Experience of Engineering

**+40 000 k**

Covred customer requirements

**+400**

Employing Engineers

**+100 000 k**

Automated test scenarios

## AREA OF EXPERTISE



**Vehicle Body and Comfort Electronics Testing**

Confort functions  
Energy managment  
Interior and exterior Light

Car Access  
Entertainment  
Car sharing



**In-Vehicule Networks Testing**

Gateways  
Automotive Ethernet  
CAN/CAN FD

FlexRay  
LIN



**Functional Safety and Security Testing**

Hazard analysis and risk assessment  
ASILratings

Technical Safety Requirement analysis and testing

Safety processes and documentation management in compliance with ISO-26262 standard

# PROJECT LIST

NUM	TITLE	MONTH
01	Developing an Android Automotive Application Using the Android Based on VSOMEIP	4 - 6
02	Implement VS Code Plugin for Robot Framework	4
03	Establishing an Embedded Android virtual Platform and Implementing Protocols to Ensure Interaction with the Automotive Ecosystem	4 - 6
04	Developing an Android library to manage GPIO on a Raspberry Pi	4 - 6
05	An AI Solution for Automatic Logs Messages Analysis	4 - 6
06	Design and Development of Desktop Application for AI-Assisted Pre-Analysis for Automotive Android	4 - 6
07	CI/CD, Deployment And Scheduling Workflow For The Data Activity	4 - 6
08	Continuous Integration (CI) Pipeline for ProxyApp	4 - 6
09	Implement Custom Wireshark Plugins For Some Profiles	4
10	Validate And Compare ARXML Files Or XML Files	5
11	Visualise Ethernet Topology	5
12	Development Of Web Application For Managing, Tracking Resources, And Hiring Prediction	4 - 6
13	Development Of Web Application For Testing Activities And Requirement Coverage Activities Management	5 - 6
14	Data Management / BI (Requirement Based Comparison, Coverage Statistic, ...)	4
15	Car Environment Simulation	6
16	Auto-generation of C++ Vsomeip Application for SIL-Kit Communication	5
17	Enhancing an Automotive Gateway Application for Real-time Performance and DLT Integration	5
18	Offline Gateway Routing Analysis	6
19	Test Bench Setup Preparation Tool	6
20	Developing a Web Application for Onboarding and Offboarding Management	4 - 6
21	ARXML Editor	4 - 6
22	Functional Tests Scripts Generator	4 - 6
23	Automotive Testing Hardware Emulation	4 - 6
24	Java Full Stack App For Test Management Activities	5
25	.Net Full Stack App For Test Management Activities	5
26	Clustering Of Test Cases Failures Based On Errors Logs	4 - 6
27	SOME/IP Standalone ECU Simulation	4 - 6

# PROJECT 01

# Developing an Android Automotive Application Using the Android Based on VSOMEIP

## TECHNOLOGY



## KEYWORDS

VSOMEIP, Android, Ethernet Communication



Software Engineering



Software Engineering



4 - 6 Months

## 01 CANDIDAT

## OBJECTIVES

Developing an Android application with a client-server architecture based on VSOMEIP (Vehicle Service-Oriented Middleware for IP) involves setting up a client-server communication model, integrating VSOMEIP, and handling communication between the client and server

## REQUIRED TASKS

1-Integrating VSOMEIP (Vehicle Service-Oriented Middleware for IP) into the Android Open Source Project (AOSP) and building the sample example

[vsomeip/examples/hello\\_world/readme\\_android at master · COVESA/vsomeip · GitHub](#)  
[GitHub - nkh-lab/ndk-vsomedip-hello-world: Android Studio example how to use vsomedip between two app services from native code.](#)

2- Modify the hello\_world Code for client serveur application ( Implement App Logic)

3- testing , documentation and execution in android Automotive

# Implement VS Code Plugin for Robot Framework

## PROJECT 02

### OBJECTIVES

Robot Framework, made by Nokia, is a free tool we use in our business to run tests. To make it easier, there are programs like RED (works with Eclipse), RIDE, and Visual Code. Currently, at Primatec, we are using RED, plus we added new in-house plugins. However, we encountered performance issues and noticed limitations in the GUI interface while using this IDE.

Furthermore, Visual Studio Code is presently the most widely used code editor globally. This makes it necessary to move what we've done in RED to VS Code. This change will not only improve performance and user-friendliness but also keep us updated with the latest and most popular technologies in the IT industry.

### REQUIRED TASKS

Drag and Drop feature from different types of Database to Testcase editor.  
Jenkins Connectivity.  
Framework automatic update.

### TECHNOLOGY



### KEYWORDS

Robot Framework, VS Code, TypeScript, JavaScript, python, SQL



Object Oriented Programming



Computer Science Engineer



4 Months

**01** CANDIDAT

# PROJECT 03

## Establishing an Embedded Android virtual Platform and Implementing Protocols to Ensure Interaction with the Automotive Ecosystem

### TECHNOLOGY



Automotive OS

### KEYWORDS

C++, Rust, familiar with Linux environment/commands, Embedded Android Knowledge (AOSP)



Object-Oriented Programming



Computer Science Engineering  
Embedded Systems Engineering



4 - 6 Months

### 02 CANDIDAT

### OBJECTIVES

- This project aims to design a new architecture for the interaction between the infotainment ECUs and the automotive ecosystem.
- This architecture will base on the latest Android technologies to enhance flexibility, safety and performance.
- The project includes prototyping and testing of an Android virtual platform to assess its interaction capabilities, flexibility, and safety.

### REQUIRED TASKS

- Understand Embedded Android Architecture
- Set up and configure the Android Emulator on your development environment.
- Familiarizing with the emulator's settings, including device configurations, system images, and hardware emulation.
- Integration of Required Protocols
- Establish a Virtual Setup for Multiple Emulators
- Protocol Finalization and Demo Implementation

# Developing an Android library to manage GPIO on a Raspberry Pi

## PROJECT 04

### OBJECTIVES

The main idea of this project is to implement and test an android library To manage the GPIO of Raspberry Pi

This project will allow you to create a reusable Android library for GPIO management on a Raspberry Pi and test its functionality through an Android app. you can perform Hardware-in-the-Loop (HIL) testing to test your Android library for managing GPIO on a Raspberry Pi. HIL testing involves testing your software with real hardware components to ensure that it works correctly in a real-world environment. In this case, you would use the actual Raspberry Pi and connected GPIO pins as part of your testing process

### REQUIRED TASKS

- Set Up Your Raspberry Pi
- Set Up Your Development Environment for Android library
- Write the Library Code
- Write an example application use the library
- Testing(Timing test) the Library (in raspberry pi
- Test in Hardware)
- Document the Library and test report
- Timing test: we need to prepare a test environment to calculate the interaction time.

### TECHNOLOGY



Raspberry Pi



Automotive OS

### KEYWORDS

Android library, GPIO Manager, Hil test, Raspberry Pi



Basic Knowledge of GPIO on Raspberry Pi



Software Engineering



4 - 6 Months

**01** CANDIDAT



# PROJECT 05

## An AI Solution for Automatic Logs Messages Analysis

### TECHNOLOGY



Spring Boot

### KEYWORDS

AI solution



Object-Oriented Programming



Software Engineering / License



4 - 6 Months

**02** CANDIDAT

### OBJECTIVES

The aim of this project is to design and implement an intelligent solution for logs analysis. The solution consists of designing intelligent algorithms for logs messages comparison. The proposed algorithms help to enhance the analysis quality of cause detection.

A proposed module includes an automatic module for parameters settings.

### REQUIRED TASKS

- Collect needed data
- Analyze the collected data
- Design intelligent algorithms for logs messages comparison
- Implement the algorithms into backend app
- Expose the comparison result in web app.

# Design and Development of Desktop Application for AI-Assisted Pre-Analysis for Automotive Android

## OBJECTIVES

This Project consists of the design and implementation of “Desktop Application for AI-Assisted Pre-analysis for Automotive Android”, a method of log analysis powered by AI (Artificial Intelligence) and automation. This application should ensure the pre-analysis of Embedded Android OS Log through detection of abnormal behaviors, classification of issues causes and assist remedies decisions. Intelligence platforms learn what’s “normal” behavior in Android systems, and surface performance impacting issues in the context of alerts and metrics in the same timeframe. The gathering of useful database can be achieved through different techniques like web scraping. This extra layer of intelligence analyzes logs automatically, detecting the root cause of issues and surfacing anomalies that exist within log data.

## REQUIRED TASKS

- Understand Embedded Android Architecture
- Set up and configure the Android Emulator on your development environment and run some applications.
- Gather necessary logs data and ensure the embellishment of database to enable building a robust training model.
- Study of Mapping Log Analysis problem to AI/ML problem and learning method based on database features.
- Build AI model with appropriate algorithms.
- Validate and optimize proposed solution

# PROJECT 06

## TECHNOLOGY



## KEYWORDS

Embedded Android, AI, programming languages, familiar with Linux environment/commands



Object-Oriented Programming



Computer Science Engineering  
Embedded Systems Engineering



4 - 6 Months

## 02 CANDIDAT

# PROJECT 07

## CI/CD, Deployment and Scheduling Workflow for the Data Activity

### TECHNOLOGY



### KEYWORDS

DevOps, Data Engineering, Kubernetes, Gitlab CI/CD, Scheduling



Engineering, Computer Science



DevOps, Data Engineering



4 - 6 Months

### 01 CANDIDAT

### OBJECTIVES

In Primatec's Engineering Data team, we are building pipelines that ingest, integrate and process data, we also build data applications for BI, Dashboarding and ML. Testing, deploying, and monitoring these jobs are crucial steps that need to be designed and implemented within the available technical environment and working stack (Gitlab CI/CD, Kubernetes, Airflow and ELK stack are the potential technologies to explore). The main goal of this project is to:

- Explore CI/CD, deployment and scheduling potential solutions and technologies
- Set up and document a CI/CD, deployment, and scheduling workflow for the Data Activity
- Set up a logging and monitoring system

### REQUIRED TASKS

- Understand the technical and business context
- Elaborate a workflow adapted to the data activity and to the technical context
- Develop the needed pipelines configurations and templates
- Test the different steps and stages separately and as a whole
- Apply it on existing data jobs

# Continuous Integration (CI) Pipeline for ProxyApp

## PROJECT 08

### OBJECTIVES

The proposed project aims to establish a comprehensive Continuous Integration (CI) pipeline for the ProxyApp project. This CI pipeline will automate the process of detecting new Product Data Exchange (PDX) software packages received from the client, building the ProxyApp using the associated Git hash, deploying the resulting package to an Artifactory repository, and running smoke tests to ensure the integrity of the build.

- Automatically detect new PDX software packages received from the client.
- Create a trigger mechanism that initiates the CI process when a new PDX package is detected.
- Deploy ProxyApp Package.
- Run SmokeTest to verify the functionality and integrity of the built ProxyApp.

### TECHNOLOGY



### KEYWORDS

Machine Learning, NLP, API, Python, Flask, Kubernetes



Highly Required  
GitLab CI / Bazel



Computer Science Engineer



4 - 6 Months

### REQUIRED TASKS

- Understand the technical and business context
- Elaborate a workflow adapted to the data activity and to the technical context
- Develop the needed pipelines configurations and templates
- Test the different steps and stages separately and as a whole
- Apply it on existing data jobs

**01** CANDIDAT

# PROJECT 09

## Implement Custom Wireshark Plugins for Some Profiles

### TECHNOLOGY



### KEYWORDS

Wireshark, lua, automotive, windows and Linux



Software Engineering



Software Engineering



4 Months

**01** CANDIDAT

### OBJECTIVES

Implement wireshark plugins for both windows and Linux for dissecting custom protocol used in automotive communication.

Plugins: BTS, umc, BTS EVO, BRSPY, Message tunnel

### REQUIRED TASKS

- Analyze and Design
- implement plugin

# Validate and Compare ARXML Files or XML Files

## PROJECT 10

### OBJECTIVES

- The arxml file can contains some errors so we need to develop a tool to validate an arxml or xml file.
- Two arxml files can contains some difference between elements (ECUS, CLUSTER, FRMAES, SIGNALS...) so we need to extract the difference between them.

### REQUIRED TASKS

- Analyze and Design.
- implement the validation of the arxml file.
- Implement the difference between two arxml files.

### TECHNOLOGY



### KEYWORDS

Xml, arxml, xsd



Software Engineering



Software Engineering



5 Months

**01** CANDIDAT

# PROJECT 11

## Visualise Ethernet Topology

### TECHNOLOGY



### KEYWORDS

Xml, arxml, db file



Software Engineering



Software Engineering



5 Months

### 01 CANDIDAT

### OBJECTIVES

The arxml file is very complicated so we need to implement a tool to visualize the communication between ECUs.

- We will implement a diagram contains the communication between ECUs, Services, Methods.

- We will implement a diagram contains the communication between ECUs, Coupling Element, Coupling Ports and Vlan.

### REQUIRED TASKS

- Analyze and Design.

- A diagram contains the communication between ECUs, Services, Methods.

- A diagram contains the communication between ECUs, Coupling Element, Coupling Ports and Vlan.

# Development of Web Application for Managing, Tracking Resources, and Hiring Prediction

## OBJECTIVES

The main idea of this project is to design and implement a resources Design and implement a resources management application. Users will able to track :

- Skills evaluations
- Skills matrix by employee
- Resources jobs rotations by project

## REQUIRED TASKS

- Automate on boarding process : Skills evaluations and define improvement path.
- Manage skill matrix by resource.
- Manage project and define required technologies.
- Manage resources assignment by project.
- Get hiring prediction by project and automate hiring on Linked-in.

# PROJECT 12

## TECHNOLOGY



Spring Boot



## KEYWORDS

Skill matrix, Skills Evaluations, Hiring Prediction



Object oriented Programming, Spring Boot, Angular, SQL



Software Engineering



4 - 6 Months

**02** CANDIDAT



# PROJECT 13

## TECHNOLOGY



## KEYWORDS

Architecture, Microservices,  
Test activity, backend



Object oriented Programming,  
Spring Cloud, Angular, SQL



Software Engineering



5 - 6 Months

## 02 CANDIDAT

# Development of Web Application for Testing Activities and Requirement Coverage Activities Management

## OBJECTIVES

As a new concept, integrating a microservices architecture between backend applications can bring so many improvements and resolve many synchronizations issues.

To do that, we need to implement too big parts testing activities and requirement coverage activities as backend solution.

Applications should be able to communicate internally without using external Apis calls.

## REQUIRED TASKS

- Need analysis: understand the test activity (coverage, reporting, validation configuration, ...)
- Define the different component architecture then the DB structure of each component.
- Implementation
- Deployment

# Data Management / BI (Requirement Based Comparison, Coverage Statistic, ...)

## OBJECTIVES

Creating interactive Dashboards that display real-time Data using BI tools.

- Gain hands-on experience in data collection, cleaning, and integration.
- Develop proficiency in using BI tools for creating data visualizations and reports.

## REQUIRED TASKS

- Assist in data collection, transformation, and integration from various sources.
- Perform data quality checks and troubleshoot data discrepancies.
- Participate in design and data modeling.
- Support the development and maintenance of BI dashboards and reports.


# PROJECT 14


## TECHNOLOGY




## KEYWORDS

BI, Data Analysis, ETL

 Proficiency in data manipulation using SQL, Analytical Skills

 Software engineering or License

 4 Months

**01** CANDIDAT

# PROJECT 15

# Car Environment Simulation

## TECHNOLOGY



## KEYWORDS

Automotive, Real-Time, 3D, Animation, Signals, Simulation.



Software Engineering or Relatives



Computer Science



6 Months

## 02 CANDIDAT

## OBJECTIVES

Automotive simulation revolutionizes car testing by enabling virtual analysis of designs, enhancing safety, and saving time and costs.

- The Goal is to Design a 3D Environment that offer a real-time car testing depends on incoming signals to simulate the car in his real state.
- Simulate Car ECUs communication during Drive, Park, Neutral and Reverse State

## REQUIRED TASKS

- Analyze and Design.
- Prepare 3D Environment.
- Modeling and Animating 3D Objects.
- Implement Game Design Concepts.
- Real-Time Communication.
- a diagram contains the communication between Winforms, Socket and Unreal Engine

# Auto-Generation of C++ Vsomeip Application for SIL-Kit Communication

## OBJECTIVES

### - ARXML Analysis:

Extract critical information from ARXML files, including services, UDP ports, client/service behavior, IP addresses, and more.

### - Template-Based Autogeneration:

Develop a C++ template system to generate vsomeip application code using ARXML data.

### - Dynamic Configuration Handling:

Implement dynamic configuration management for adapting to ARXML file updates.

### - Functional Testing:

Conduct comprehensive functional testing by integrating the generated vsomeip application with VECU, CVD Cuttlefish, and a virtual-to-real Ethernet gateway.

### - Optimization:

Optimize code for enhanced performance, memory efficiency, and real-time communication.

## REQUIRED TASKS

- Auto-generation system for the vsomeip application.

- Vsomeip application code templates.

- Integration of autogeneration system with the VECU, CVD Cuttlefish, and the virtual-to-real Ethernet gateway.

- Testing and validation of vsomeip communication based on various ARXML configurations.

- Performance-optimized vsomeip application

# PROJECT 16

## TECHNOLOGY



## KEYWORDS

C++, CMake, Linux, ARXML, SOME/IP, Automotive Ethernet



Object Oriented Programming



Computer Science Engineer,  
Embedded Systems Engineer



5 Months

**01** CANDIDAT

# PROJECT 17

## Enhancing an Automotive Gateway Application for Real-Time Performance and DLT Integration

### TECHNOLOGY



### KEYWORDS

C++, Qt, CMake, Linux, ARXML



Object Oriented Programming



Computer Science Engineer,  
Embedded Systems Engineer



5 Months

### 01 CANDIDAT

### OBJECTIVES

- Real-time Performance Improvement: Analyze the existing gateway application to identify performance bottlenecks. Implement optimizations to enhance real-time responsiveness.
- DLT Integration: Customize the gateway application to generate log and trace data in DLT format. Implement different logging levels (debug, info, warning, error).
- User-friendly Configuration Tool: Develop a graphical user interface to enhance configurability.
- Memory and Thread Management: Optimize memory usage for efficient resource allocation. Implement effective thread management to improve application stability.

### REQUIRED TASKS

- A high-performance automotive gateway application optimized for real-time operation.
- Integration with DLT for real-time logging and trace analysis, facilitating diagnostics.
- A user-friendly GUI for configuring the application, enhancing usability.
- Improved memory and thread management, ensuring robust application behavior.

# Offline Gateway Routing Analysis

## PROJECT 18

### OBJECTIVES

A tool needed to be able to read gateway table and the pcap trace then dynamically detect routing bugs .

### REQUIRED TASKS

A tool needed to be able to:

- Parse a gateway table (json file) and represents it in a GUI: enable to user to search by PDU, signal, ID ...
- Takes as input a gateway table and the generated pcap trace and detects dynamically the routing bugs
- Generates a detailed report containing the routing bugs.

### TECHNOLOGY

 DevExpress™

 Winforms or WPF

### KEYWORDS

Gateway Table, Ethernet, Json, Routing, Bugs, Report, PCAP



Computer Engineering Student



Computer Science Engineer



6 Months

**01** CANDIDAT

# PROJECT 19

## Test Bench Setup Preparation Tool

### TECHNOLOGY



### KEYWORDS

Python, Docker, Ansible, Shell, GIT



Problem solving, POO, Python Programming Skills, GIT



Computer Science Engineer,



6 Months

### 01 CANDIDAT

### OBJECTIVES

The goal of this project is to prepare Testbenches from scratch.

The preparation will be done automatically using open-source tools such as Packer ,Ansible, Docker, etc...

Both Windows and Linux will be supported.

Also, new added tools and software should be possible to be deployed remotely.

# Developing a Web Application for Onboarding and Offboarding Management

## OBJECTIVES

The objective of this project is to develop a web-based onboarding and offboarding tool that streamlines the process of creating new Active Directory accounts for new joiners, sending email notifications containing credentials to new joiners, and facilitating the secure and efficient departure of employees. This tool will simplify and automate both the onboarding and offboarding processes, making them more efficient for the IT Administrator.

## REQUIRED TASKS

- **Requirements Analysis:** Conduct a detailed analysis of the requirements for both onboarding and offboarding to understand the specific needs of the organization.
- **Web Application Development:** Build the web application, including both the front-end and back-end components, to implement the required features and functionality.
- **Testing:** Test the application's functionality across different web browsers to ensure compatibility and usability.

# PROJECT 20

## TECHNOLOGY



## KEYWORDS

Active Directory, LDAPS, SSL, VPN, MS Office 365



Object Oriented Programming  
Analytical Skills



Computer Science Engineer



4 - 6 Months

**01** CANDIDAT



# PROJECT 21

# ARXML Editor

## TECHNOLOGY



## KEYWORDS

AUTOSAR, ARXML, C++, Qt, GUI, Cross-Platform



Object Oriented Programming  
Analytical Skills



Computer Science Engineer



4 To 6 Months

## 01 CANDIDAT

## OBJECTIVES

An ARXML file is a configuration file saved in AUTOSAR XML (ARXML) format. It is used by AUTOSAR, an initiative of automotive manufacturers and suppliers formed in 2003 to establish software architecture for automotive electronic control units (ECUs). ARXML files contain configuration and specification information in XML format for an ECU, which is used to control components of an engine to make sure an engine achieves optimal performance.

Writing an ARXML file is a heavy task, especially with the high probability of making mistakes due its special structure that should be followed (described in \*.xsd file).

Currently, there is no a free tool/editor that could be used, so the purpose of this internship project is to develop an editor that make this task easier and reduce the chance of making errors.

## REQUIRED TASKS

- Understand the schema described in \*.xsd file.
- Design and implement a GUI that allow to parse existing ARXML files , edit them and generate new ones that respects the schema.

# Functional Tests Scripts Generator

## PROJECT 22

### OBJECTIVES

Functional testing is a type of testing that seeks to establish whether each application feature works as per the software requirements.

In the context of project we send SOME/IP frames to the hardware emulator (Qemu) to execute a specific scenario, in order to test our implementation or reproduce a bugs. The payload of those frames are stored in json format.

Writing a test scenario or analyzing its results require a high attention and may contain errors.

So the purpose of this internship project is to develop a desktop application on Linux environment to aid the developer to write, execute and analyze functional tests.

### REQUIRED TASKS


- Understand the messages structures stored in .proto files.
- Design and development a GUI interface that aid the user to write functional tests in a guided way to reduce the probability of errors, this GUI should be able to open existing scenarios and execute them, and present their results (PASSED/FAILED)


### TECHNOLOGY



### KEYWORDS

SOME/IP, C++, Qt, GUI, Protobuf, Linux, Functional Testing, Qemu

 Object Oriented Programming Analytical Skills

 Computer Science Engineer

 4 To 6 Months

**01** CANDIDAT

# PROJECT 23

# Automotive Testing Hardware Emulation

## TECHNOLOGY



## KEYWORDS

C++ / Python / Qt / Network protocols / Automotive Testing Hardware



Problem solving, POO, C++ programming skills



Computer Science Engineer



4 To 6 Months

## 01 CANDIDAT

## OBJECTIVES

Several teams are working with BTS HW Boards (Body Electronic Test System) and CM (capture models) devices to test Automotive ECUs.

The team is growing, which has increased the need for these devices and since the hardware is limited, we come up with the idea to Emulate some automotive hardware devices used in automotive testing industry (BTS/CM) to decrease (as much as possible) the physical dependence to these devices.

## REQUIRED TASKS

- Simulate the initialization of some automotive hardware (BTS/CM).
- Simulate frames sending/receiving over LIN/ CAN /Flexray busses.
- Simulate hardware signals events (analogue/digital signals).

# Java Full Stack app for Test Management Activities

## PROJECT 24

### OBJECTIVES

Implement Full stack application for Test Management Activities. This application will help our testers and Manager in their daily tasks (Centralizer the data, user friendly GUI,..) The developer will be involved on the whole test and dev process to be able to design and implement the target product.

As frontend app, the candidate will use ReactJS/ ViewJS as web framework.

For the backend app, it will be Spring boot app (java 11).

The deployment of this application should be automatized via DevOps process.

### REQUIRED TASKS

- Analyze and Design
- implement backend API
- implement frontend app
- Autonomous deployment
- Data indexation via Elastic Search

### TECHNOLOGY



### KEYWORDS

Java/SpringBoot, ReactJS/ ViewJS , PL/SQL, DevOps, Test Activities, Test Management process, Elastic Search, ...



Software Engineering



Software Engineering



5 Months

**02** CANDIDAT

# PROJECT 25

## .Net Full Stack app for Test Management Activities

### TECHNOLOGY



### KEYWORDS

.Net, C#, asp .Net, PL/SQL, DevExpres



Software Engineering



Software Engineering



5 Months

**02** CANDIDAT

### OBJECTIVES

Implement Full stack application for Test Management Activities. This application will help our testers and Manager in their daily tasks (Centralizer the data, user friendly GUI,..) The developer will be involved on the whole test and dev process to be able to design and implement the target product.

The frontend app will be implemented via .net DevExpress framework

The backend app, it will be ASP .NET app.

The deployment of this application should be automatized via DevOps process.

### REQUIRED TASKS

- Analyze and Design
- implement backend API
- implement frontend app

# Clustering of Test Cases Failures Based on Errors Logs

## OBJECTIVES

At Primatec Engineering, our main goal is to test our customer automotive software behaviour according to specified requirements. To that end, testcases are implemented and run on test benches. The execution of these testcases generates logs and traces that are analysed in case of failure to identify the root cause and thus detect defects in the test case implementation, in our testing environment or eventually a defect in the software itself. In general, the failure cause of multiple testcases is identical or similar, building an intelligent clustering solution of test cases failures based on the error can optimize the analysis phase adding efficiency and reducing time.

The main objectives of this project:

- Build a clustering solution for Test Cases Failures based on Errors logs.
- Deploy the eventual selected solution so that it is integrated into our Primatec's Engineering internal tools.

## REQUIRED TASKS

- Understand the business need and the available data.
- Formalise and document the problem.
- Explore, clean and transform the data.
- Apply Feature engineering, train and tune models.
- Elaborate and develop a deployment/delivery solution.

# PROJECT 26

## TECHNOLOGY



## KEYWORDS

Machine Learning, NLP, API, Python, Flask, Kubernetes



Machine Learning, Data Engineering



Engineering, Mathematics



4 - 6 Months

**01** CANDIDAT

# PROJECT 27

## SOME/IP Standalone ECU Simulation

### TECHNOLOGY



### KEYWORDS

C/C++, SQL, Python, SOME/IP Protocol, E2E encryption, TCP/UDP in-vehicle network, Common API, API SOME/IP



Object-Oriented Programming



Computer Science Engineer,



4 - 6 Months

### 01 CANDIDAT

### OBJECTIVES

- Parse the message catalog file (database version) using SQL and read and extract all Ethernet tables (Ethernet buses, Ethernet ECU, SOME/IP services provided and consumed, SOME/IP entities (event, method, field,), End-to-end encryption SOME/IP messages, cyclic SOME/IP message, ...
- The application should initiate and establish the SOME/IP communication (UDP and TCP) for all or specific ECUs (offer and subscribe acknowledgment for provided services, request and subscribe for consumed services, and send cyclic SOME/IP services.
- The application should know how to serialize a SOME/IP Message to be sent and deserialize a received Some Ip message.
- The application should be controlled using the command line, so the user can enable/disable the SOME/IP communication (UDP and TCP) for all or specific ECUs. The user can also send a method request or a setter, prepare the value for a method response, and so on.

### REQUIRED TASKS

- Create the configuration file of the application.
- Parse the Database file (ethernet tables)
- Create a common line handler.
- Initiate and establish all SOME/IP features.
- Command line feature
- GUI using QT (if possible)

# HOW TO APPLY

SCAN THE  
QR CODE





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