ML System Engineer

# **Slot: 1**

# **Procedure**

1. Online Test.
2. In-person Interview.

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# Karan Raj Bagri

Round-1

### **1. DSA Questions**

* **Searching in a Rotated Array:**  
  I was asked to solve the classic problem of searching for an element in a rotated sorted array.
* **Downward Paths in a Tree:**  
  The next question involved counting all downward paths in a tree such that the sum of the nodes along each path equals a given target value.

Comment: I was asked to write **pseudocode** for the solution on paper.

### **2. C++ Discussion**

* **Smart Pointers vs. Normal Pointers:**  
  I was asked to compare **smart pointers** and **normal pointers**, along with the potential issues that can arise with raw pointers.
* **Virtual Functions and Destructors:**  
  We discussed the role and importance of **virtual functions** and why a **virtual destructor** is necessary in certain cases.
* **Singleton Classes:**  
  They asked me to explain the concept of **singleton classes** and how I would implement one in **C++** and **Python**.

Comment: The main theme was how C++ was different to other languages like Java and python. As soon as I mentioned that I had not used C++ recently, the interviewer said ‘Well, we are looking for ...”.

### **3. Machine Learning Questions**

* **Batch Normalization:**  
  I was asked to explain the purpose and working (along with equations) of **batch normalization** in neural networks.
* **Attention Mechanism:**  
  The interviewer was interested in the **attention mechanism** and how it solves specific challenges in machine learning.
* **LSTM Gates:**  
  We discussed the gates in **LSTMs** and their functions.

Comment:The interviewer seemed more curious about **object detection;** I clarified that most of my experience in computer vision had been in **segmentation**.

Comment: They were looking for a systems engineer with a bit of ML knowledge (and not the other way around).

Result: Rejection

Probable reason: Rustiness with C++ concepts.

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