1. **What is vehicle computing?**

* Vehicle computing uses computational resources like an in-vehicle computer (or) on-boarding computational equipment as a computing platform. As a result, connected devices with limited computation capacities can rely on vehicle computing to perform complex computational tasks.
* Vehicle computing enables the technology to allow connected devices to perform computation on CAV’s(Connected and autonomous vehicles), and therefore, it can provide the infrastructure as a service.
* Vehicle computing focuses on the computational functionality of CAV’s. In the vehicle computing paradigm, each connected autonomous vehicle (parked/non-parked) is considered an edge computing node.

1. **Why do we need vehicle computing?**

* Moving vehicles that rely on cloud computing is not autonomous and has several problems.
* With the emerging of vehicular technology, usage of enormous sensors on CAVs, IoT, the amount of data generated per second increased to 1 gigabyte.
* Analyzing the real-time data by pushing to cloud servers needs speed data transportation and has significant challenges in transporting such massive real-time data to the cloud servers. Vehicle computation turned out to be one of the possible solutions to addressing some of the challenges we have with traditional cloud computing, like below
  + Latency bottlenecks. Vehicular computation can minimize the network overhead.
  + Privacy concerns
  + Significant response time
  + Energy reduction& etc.

1. **Describe one application of vehicle computing? Expand it on What is given in the paper?**

* Helps in building the smart city.
* Delay-sensitive applications can use vehicle computing.
* In-vhehicle delivery
* In-vehicle meeting
* In-vehicle entertainment
* In-vehicle AR

1. **Summarize technical challenges?**

There are several technical challenges are there in the vehicle computing

* + Systems
    - 1. Designing a reasonably priced hardware system.
      2. Capable of operating in harsh environment
      3. Energy consumption
      4. Heat dissipation
      5. Shock and vibrant resistant design
  + Network and communications
    - 1. Latency and reliability constraints. Require Ultra-reliable and low-latency communications
      2. Infrastructure and deployment cost
  + Algorithm
    - 1. Designing the task offloading algorithms.
      2. Manage the heterogeneous computational hardware and resource allocation.
      3. Dynamic scheduling of tasks for both parking& moving vehicles.
      4. Test simulations.
      5. Real-time testing environments.
      6. Lack of open APIs.
  + Other
    - 1. Security and privacy
         1. Data security
         2. Communication security
         3. Control security
      2. Social acceptability – In the case of public usage, Spending a large amount of money on the autonomous car. How many people will agree to provide their vehicle to use as an edge computing node?

To summarize, Vehicle computing majorly has challenges of hardware systems, communications, and frameworks to be addressed, requires an open API platform& community, and new standards are required.