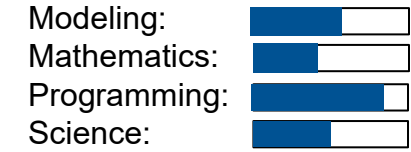


GraphQL API for Robot Fleet Management

Task

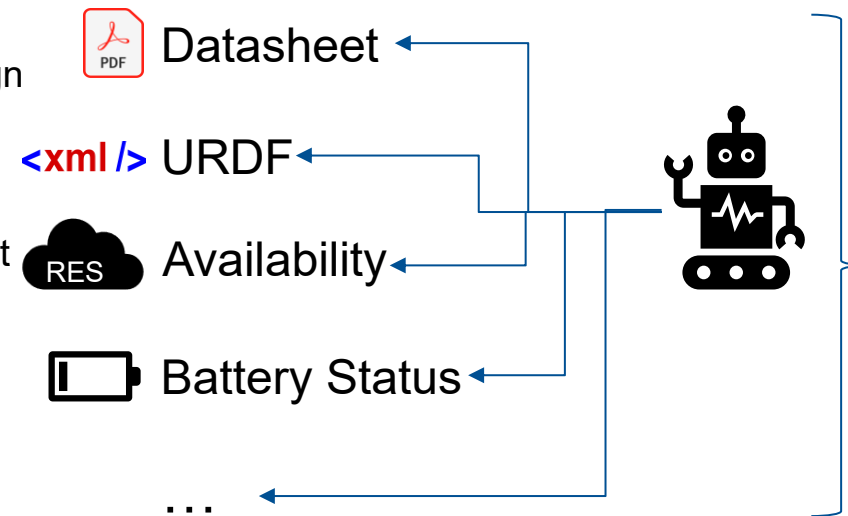
This student project aims to develop a **GraphQL API for robotics fleet and sensor management**, providing a unified developer interface for querying robots, components, sensors, measurements, and runtime status. The system will integrate robotic ontologies, real lab sensors, and automatic ingestion of URDF models and datasheets to enable scalable, frontend-friendly access to heterogeneous robotics data.

Project Characteristics



Instructions:

- Study relevant robotics and IoT sensor ontologies and design a stable, developer-oriented GraphQL schema.
- Implement a GraphQL backend with resolvers and adapter layers connecting robot and sensor data.
- Develop an automated pipeline to map URDF files and robot datasheets into the schema.
- Integrate at least one real sensor setup and expose measurement data via the API.
- Create a small frontend demo to showcase end-to-end querying and fleet visualization.



```
type Robot {  
  id: ID!  
  name: String  
  model: String  
  manufacturer: String  
  yearManufactured: Int  
  isOperational: Boolean  
  batteryLifeHours: Float  
  AvailabilityStatus:  
  AvailabilityStatus  
  ...  
}
```

[1] <https://spec.graphql.org/September2025/>

[2] <https://wiki.ros.org/urdf/XML>