Towards MLOps in Mobile Development with a Plug-in Architecture for Data Analytics

The paper "Towards MLOps in Mobile Development with a Plug-in Architecture for Data Analytics" introduces a plug-in architecture to facilitate the integration of machine learning operations in mobile app development, specifically on the Android platform. It tackles the challenge of programming language limitations and the separation between ML model development and app development by enabling modularity and independent component updates. The main finding is that this architecture significantly enhances the agility, extensibility, and customization of mobile apps with embedded ML components, making it possible for ML engineers to work more independently from the app development process.

Strengths:

- Better integration of machine learning and Android app development.
- The architecture simplifies updates and maintenance by allowing ML components to be developed as independent modules.
- Supports agile development practices, enabling faster iterations and responsiveness to changes.
- Customization.

Weaknesses:

- They just focus on Android apps.
- Managing a large number of independently updated modules could become challenging as the application and its user base grow.
- The core is the bottleneck and the single point of failure.
- Limited integration testing.
- Reduced performance.

Open Issues:

- Integrate the architecture with existing tools to enable a complete MLOps cycle, covering everything from data collection to operation.
- Validate the architecture's usability in the real-world agile development team.
- Implement a system to ensure consistent data schema communication among different ML engineers.
- Develop a system to selectively load the most relevant plug-ins in real time using a classification taxonomy.

The paper's relevance to our project goals:

- Working on smartphones as IoT gateways.
- Developing Android apps.
- Focusing on AI applications.
- Working on MLOps in the context of mobile development.