

Real-Time Android



Android ist eine moderne Plattform für eingebettete Systeme. Unterstützung für Multitasking und Bedienerfreundlichkeit machen dieses Betriebssystem sowohl für Benutzer als auch für Entwickler attraktiv. Heutzutage wird der Einsatz von Android auch im industriellen Umfeld zur Zwecken von Automatisierung, Überwachung und Steuerung von Prozessen evaluiert.

Dies motiviert die Analyse der Tauglichkeit von Android für echtzeitkritische Applikationen in zeit- und sicherheitskritischen Domänen. Das Ziel dieses Projektes besteht in der Entwicklung einer neuen Android Version. Diese soll zum einen echtzeitkritische Applikationen unterstützen und zum anderen abwärtskompatibel zu existierender Software sowie Drittanbieter-Komponenten sein. Weiterhin werden die Mobilität eines Tablet PCs und dessen umfangreiche Kommunikationsschnittstellen mit einer zuverlässigen und echtzeitfähigen kabellosen Kommunikation kombiniert.

Die RTAndroid Plattform, welche Applikationen mit Echtzeit-Anforderungen unterstützt, erweitert das Anwendungsfeld von mobilen Geräten auf zeitkritische Domänen. Dadurch wird es ermöglicht, industrielle Anlagen vor Ort zu überwachen und zu automatisieren. Dieses Projekt evaluiert die Anwendbarkeit von RTAndroid in typischen Szenarios für Speicherprogrammierbare Steuerungen (SPSen). Kontinuierliche Weiterentwicklungen hinsichtlich Portabilität, Bedienerfreundlichkeit und Rechenleistung von modernen Tablet PCs ermöglichen Implementierung einer neuen, integrierten Entwicklungsumgebung für SPS-Programmiersprachen. Basierend auf der grundlegenden Echtzeitunterstützung kann RTAndroid als eine All-in-one Plattform für die Entwicklung, Simulation und Ausführung von SPS Programmen einschließlich der Kommunikation mit externer Hardware verwendet werden.

Details

<http://rtandroid.embedded.rwth-aachen.de>

Ansprechpartner

[Dr. rer. nat. Igor Kalkov](#)

Veröffentlichungen

[Kal17]

[PDFBIB](#)

Kalkov, I., "A real-time capable, open-source-based platform for off-the-shelf embedded devices", PhD Thesis, Aachen, 2017.

A real-time capable, open-source-based platform for off-the-shelf embedded devices

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  author = { Kalkov, Igor },  
  othercontributors = { Kowalewski, Stefan and A{\ss}mann, Uwe },  
  title = { A real-time capable, open-source-based platform for  
    off-the-shelf embedded devices },  
  publisher = { RWTH Aachen University, Department of Computer  
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  school = { RWTH Aachen University },  
  pages = { 1 Online-Ressource (xx, 114 Seiten) : Illustrationen,  
    Diagramme },  
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http://publications.rwth-aachen.de/record/719343/files/719343.pdf },  
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[KGK17]

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Kalkov, I., Gurchian, A., and Kowalewski, S., "Explicit prioritization of parallel Intent broadcasts in real-time Android", in *Proc. Concurrency and computation*, Chichester, 2017, vol. 29, Wiley.

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@inproceedings { KGK17,  
  author = { Kalkov, Igor and Gurchian, Alexandru and Kowalewski,  
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[KGK15]

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    Real-Time Android using Extended Binder Framework },
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  title = { Echtzeiterweiterung f{"u}r Android: SPS inside },  
  journal = { IEE - Elektrische Automatisierung + Antriebstechnik },  
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  pages = { 58-61 },  
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  pages = { 8 Seiten },  
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  author = { Gerlitz, Thomas and Kalkov, Igor and Schommer, John F.  
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  booktitle = { 11th International Workshop on Java Technologies for  
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