

# 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

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## Veröffentlichungen

[Kal17]

[PDFBIB](#)

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

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#### **Bibtex entry :**

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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
  Science },
  school = { RWTH Aachen University },
  pages = { 1 Online-Ressource (xx, 114 Seiten) : Illustrationen,
  Diagramme },
  series = { Aachener Informatik-Berichte },
  year = { 2017 },
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  http://publications.rwth-aachen.de/record/719343/files/719343.pdf },
}
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[KGK17]

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#### **Bibtex entry :**

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@inproceedings { KGK17,
  author = { Kalkov, Igor and Gurchian, Alexandru and Kowalewski,
  Stefan },
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  real-time Android },
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booktitle = { Concurrency and computation },
publisher = { Wiley },
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address = { Chichester },
issn = { 1532-0626 },
organization = { 12. International workshop on Java Technologies
for
    Real-Time and Embedded systems, Niagara Falls, NY (USA),
    2014-10-13 - 2014-10-14 },
doi = { 10.1002/cpe.4122 },
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[KGK15]

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    author = { Kalkov, Igor and Gurchian, Alexandru and Kowalewski,
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    title = { Priority Inheritance during Remote Procedure Calls in
    Real-Time Android using Extended Binder Framework },
    booktitle = { Proceedings of the 13th International Workshop on
Java
    Technologies for Real-time and Embedded Systems },
    publisher = { ACM },
    pages = { 5, 10 Seiten },
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[KKO+15]

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  author = { Kowalewski, Stefan and Kalkov, Igor and Obster, Mathias
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  journal = { IEE - Elektrische Automatisierung + Antriebstechnik },
  publisher = { IEE },
  pages = { 58-61 },
  year = { 2015 },
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[AFK+14]

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  author = { Armoush, Ashraf and Franke, Dominik and Kalkov, Igor and
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  title = { An Approach for Using Mobile Devices In Industrial
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  booktitle = { Mobile Computing, Applications, and Services : 5th
International Conference, MobiCase 2013, Paris, France,
November 7-8, 2013, Revised Selected Papers },
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publisher = { Springer },
pages = { 294-297 },
series = { Lecture Notes of the Institute for Computer Sciences,
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                International Conference, Paris (France), 2013-11-07 -
                2013-11-08 },
doi = { 10.1007/978-3-319-05452-0_27 },
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[KGK14]

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  pages = { 8 Seiten },  
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  doi = { 10.1109/ETFA.2014.7005218 },  
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  cin = { 120000 / 122810 },  
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  author = { Gerlitz, Thomas and Kalkov, Igor and Schommer, John F.
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  title = { Non-Blocking Garbage Collection for Real-Time Android },
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  pages = { 108-117 },
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  doi = { 10.1145/2512989.2512999 },
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  Kowalewski, Stefan },
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  on Java Technologies for Real-time and Embedded Systems,
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<https://embedded.rwth-aachen.de/doku.php?id=forschung:projekte:rtandroid>

Last update: **2017/11/13 14:17**

