

# Dr.rer.nat. Bastian Schlich



## Publikationen

[BSK+15]

[PDFBIB](#)

Biallas, S., Simon, H., Kowalewski, S., Hauck-Stattelmann, S., and Schlich, B., "Automatische Testfallgenerierung für SPS-Programme mittels Zeilenüberdeckung", in *Proc. AUTOMATION 2015*, 2015, VDI, pp. 100-111.

## Automatische Testfallgenerierung für SPS-Programme mittels Zeilenüberdeckung

### Bibtex entry :

```
@inproceedings { BSK+15,  
  author = { Biallas, Sebastian and Simon, Hendrik and Kowalewski,  
Stefan  
    and Hauck-Stattelmann, Stefan and Schlich, Bastian },  
  title = { Automatische Testfallgenerierung f{"u}r SPS-Programme  
mittels Zeilen{"u}berdeckung },  
  booktitle = { AUTOMATION 2015 },  
  publisher = { VDI },  
  publishedas = { Druck },  
  language = { ger },  
  pages = { 100--111 },  
  year = { 2015 },  
  timestamp = { 2015.07.08 },  
  illkey = { conference },  
  illprojectkey = { Arcade },  
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[HBS+15]

PDFBIB

Hauck-Stattelmann, S., Biallas, S., Schlich, B., Kowalewski, S., and Jetley, R., "Analyzing the Restart Behavior of Industrial Control Applications", in *Proc. FM 2015: Formal Methods*, 2015, vol. 9109 in Lecture Notes in Computer Science, Springer International Publishing, pp. 585-588.

## Analyzing the Restart Behavior of Industrial Control Applications

### Bibtex entry :

```
@inproceedings { HBS+15,
  keywords = { Static Analysis; Abstract Interpretation; Programmable
    Logic
      Controllers },
  author = { Hauck-Stattelmann, Stefan and Biallas, Sebastian and
    Schlich, Bastian and Kowalewski, Stefan and Jetley, Raoul },
  editor = { Bj{\o}rner, Nikolaj and de Boer, Frank },
  title = { Analyzing the Restart Behavior of Industrial Control
    Applications },
  booktitle = { FM 2015: Formal Methods },
  series = { Lecture Notes in Computer Science },
  volume = { 9109 },
  publisher = { Springer International Publishing },
  publishedas = { Druck Online },
  isbn = { 978-3-319-19248-2 },
  language = { eng },
  pages = { 585--588 },
  year = { 2015 },
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  illkey = { conference },
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  url = { http://publications.embedded.rwth-aachen.de/file/5u },
  for_reporting_period = { 2015 },
}
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[SFB+15]

PDFBIB

Simon, H., Friedrich, N., Biallas, S., Hauck-Stattelmann, S., Schlich, B., and Kowalewski, S., "Automatic Test Case Generation for PLC Programs using Coverage Metrics", in *Proc. International Conference on Emerging Technologies and Factory Automation (ETFA)*, 2015, IEEE, pp. 1-4.

## Automatic Test Case Generation for PLC Programs using Coverage Metrics

### Bibtex entry :

```
@inproceedings { SFB+15,
  author = { Simon, Hendrik and Friedrich, Nico and Biallas,
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Sebastian
  and Hauck-Stattelmann, Stefan and Schlich, Bastian and
  Kowalewski, Stefan },
title = { Automatic Test Case Generation for PLC Programs using
  Coverage Metrics },
booktitle = { International Conference on Emerging Technologies and
  Factory Automation (ETFA) },
publisher = { IEEE },
publishedas = { Druck },
isbn = { 978-1-4673-7929-8 },
language = { eng },
pages = { 1--4 },
year = { 2015 },
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illkey = { conference },
for_reporting_period = { 2015 },
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[BKSS14]

PDFBIB

Biallas, S., Kowalewski, S., Stattelmann, S., and Schlich, B., "Efficient Handling of States in Abstract Interpretation of Industrial Programmable Logic Controller Code", in *Proc. Proceedings of the 12th International Workshop on Discrete Event Systems*, Cachan, France, 2014, IFAC, pp. 400-405.

## Efficient Handling of States in Abstract Interpretation of Industrial Programmable Logic Controller Code

### Bibtex entry :

```
@inproceedings { BKSS14,
  address = { Cachan, France },
  author = { Biallas, Sebastian and Kowalewski, Stefan and
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    Stefan and Schlich, Bastian },
  title = { Efficient Handling of States in Abstract Interpretation
  of
    Industrial Programmable Logic Controller Code },
  booktitle = { Proceedings of the 12th International Workshop on
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  publisher = { IFAC },
  publishedas = { Druck Online },
  language = { eng },
  pages = { 400--405 },
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  illkey = { conference },
  illprojectkey = { Arcade },
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[SBSK14]

PDFBIB

Stattelmann, S., Biallas, S., Schlich, B., and Kowalewski, S., "Applying Static Code Analysis on Industrial Controller Code", in *Proc. 19th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA)*, 2014, IEEE, Work in Progress Best Paper Award.

## Applying Static Code Analysis on Industrial Controller Code

**Bibtex entry :**

```
@inproceedings { SBSK14,
  author = { Stattelmann, Stefan and Biallas, Sebastian and Schlich,
            Bastian and Kowalewski, Stefan },
  title = { Applying Static Code Analysis on Industrial Controller
            Code },
  booktitle = { 19th IEEE International Conference on Emerging
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                and Factory Automation (ETFA) },
  publisher = { IEEE },
  publishedas = { Druck Online },
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  for_reporting_period = { 2014 },
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[BKK+13]

PDFBIB

Biallas, S., Kamin, V., Kowalewski, S., Schlich, B., Sehestedt, S., and Stattelmann, S., "Verifikation von sicherheitsgerichteten SPS-Programmen mit Hilfe von Safety-Automaten", in *Proc. Automation 2013*, 2013 in VDI Berichte, VDI-Verlag, pp. 75-79, Langfassung auf CD-ROM.

## Verifikation von sicherheitsgerichteten SPS-Programmen mit Hilfe von Safety-Automaten

**Bibtex entry :**

```
@inproceedings { BKK+13,
  author = { Biallas, Sebastian and Kamin, Volker and Kowalewski,
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            Stefan },
  editor = { VDI Wissensforum },
```

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title = { Verifikation von sicherheitsgerichteten SPS-Programmen  
mit  
    Hilfe von Safety-Automaten },  
booktitle = { Automation 2013 },  
series = { VDI Berichte },  
publisher = { VDI-Verlag },  
publishedas = { Druck },  
isbn = { 978-3-18-092209-6 },  
language = { ger },  
pages = { 75--79 },  
year = { 2013 },  
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[BKS12a]

PDFBIB

Biallas, S., Kowalewski, S., and Schlich, B., "Automatische Wertebereichsanalyse von SPS-Programmen", in *Proc. AUTOMATION 2012, Baden-Baden, Germany*, Düsseldorf, 2012 in VDI-Berichte, VDI-Verlag, pp. 79-83, Long version (12 pages) on CD-ROM.

## Automatische Wertebereichsanalyse von SPS-Programmen

### Bibtex entry :

```
@inproceedings { BKS12a,  
    address = { D{"u"}sseldorf },  
    author = { Biallas, Sebastian and Kowalewski, Stefan and Schlich,  
        Bastian },  
    title = { Automatische Wertebereichsanalyse von SPS-Programmen },  
    booktitle = { AUTOMATION 2012, Baden-Baden, Germany },  
    publisher = { VDI-Verlag },  
    publishedas = { Druck },  
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[BKS12b]

[PDFBIB](#)

Biallas, S., Kowalewski, S., and Schlich, B., "Range and Value-Set Analysis for Programmable Logic Controllers", in *Proc. Proceedings of the 11th International Workshop on Discrete Event Systems*, Guadalajara, Mexico, 2012, IFAC, pp. 378-383.

## Range and Value-Set Analysis for Programmable Logic Controllers

**Bibtex entry :**

```
@inproceedings { BKS12b,
  address = { Guadalajara, Mexico },
  author = { Biallas, Sebastian and Kowalewski, Stefan and Schlich,
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  title = { Range and Value-Set Analysis for Programmable Logic
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  booktitle = { Proceedings of the 11th International Workshop on
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  publisher = { IFAC },
  publishedas = { Druck Online },
  isbn = { 978-3-902823-28-1 },
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  pages = { 378--383 },
  year = { 2012 },
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  for_reporting_period = { 2012 },
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[BKS12c]

[PDFBIB](#)

Biallas, S., Kowalewski, S., and Schlich, B., "Automatische Wertebereichsanalyse -- Formale Verifikation für SPS-Programme", *Automatisierungstechnische Praxis (atp EDITION)*, 54. Jahrgang, 7-8/2012, pp. 68-75, 2012

## Automatische Wertebereichsanalyse -- Formale Verifikation für SPS-Programme

**Bibtex entry :**

```
@article { BKS12c,
  author = { Biallas, Sebastian and Kowalewski, Stefan and Schlich,
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  title = { Automatische Wertebereichsanalyse -- Formale Verifikation
            f{"u}r SPS-Programme },
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journal = { Automatisierungstechnische Praxis (atp EDITION), 54.
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year = { 2012 },
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publishedas = { Druck },
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for_reporting_period = { 2012 },
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```

[BBKS10]

[PDFBIB](#)

Biallas, S., Brauer, J., Kowalewski, S., and Schlich, B., "Automatically Deriving Symbolic Invariants for PLC Programs Written in IL", in *Proc. FORMS/FORMAT 2010*, 2011, Springer Berlin Heidelberg, pp. 237-245.

## Automatically Deriving Symbolic Invariants for {PLC} Programs Written in {IL}

### Bibtex entry :

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@inproceedings { BBKS10,
  author = { Biallas, Sebastian and Brauer, J{"o}rg and Kowalewski,
            Stefan and Schlich, Bastian },
  title = { Automatically Deriving Symbolic Invariants for {PLC}
            Programs Written in {IL} },
  booktitle = { FORMS/FORMAT 2010 },
  editor = { Schnieder, Eckehard and Tarnai, Geza },
  publisher = { Springer Berlin Heidelberg },
  publishedas = { Druck },
  language = { eng },
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  isbn = { 978-3-642-14261-1 },
  pages = { 237--245 },
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http://www.embedded.rwth-aachen.de/lib/exe/fetch.php?media=bib:bbks10.p
df },
  illkey = { conference },
  illprojectkey = { Arcade },
  for_reporting_period = { 2010 },
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```

[BKS11]

[PDFBIB](#)

Biallas, S., Kowalewski, S., and Schlich, B., "Leistungsfähige Verifikation von industriellen SPS-

Programmen mittels Model-Checking und statischer Analyse", in *Proc. AUTOMATION 2011, Baden-Baden, Germany*, Düsseldorf, 2011 in VDI-Berichte, VDI-Verlag, pp. 67-72.

## Leistungsfähige Verifikation von industriellen SPS-Programmen mittels Model-Checking und statischer Analyse

### Bibtex entry :

```
@inproceedings { BKS11,  
  address = { D{"u}seldorf },  
  author = { Biallas, Sebastian and Kowalewski, Stefan and Schlich,  
    Bastian },  
  title = { Leistungsf{"a}hige Verifikation von industriellen  
    SPS-Programmen mittels Model-Checking und statischer Analyse },  
  booktitle = { AUTOMATION 2011, Baden-Baden, Germany },  
  isbn = { 978-3-18-092143-3 },  
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  number = { 2143 },  
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  series = { VDI-Berichte },  
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  illprojectkey = { Arcade },  
  for_reporting_period = { 2011 },  
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```

[SBK11]

[PDFBIB](#)

Schlich, B., Brauer, J., and Kowalewski, S., "Application of Static Analyses for State Space Reduction to Microcontroller Binary Code", *Sci. Comput. Program.*, vol. 76, iss. 2, pp. 100-118, 2011

## Application of Static Analyses for State Space Reduction to Microcontroller Binary Code

### Bibtex entry :

```
@article { SBK11,  
  author = { Schlich, Bastian and Brauer, J{"o}rg and Kowalewski,  
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  title = { Application of Static Analyses for State Space Reduction  
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  journal = { Sci. Comput. Program. },
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year = { 2011 },
volume = { 76 },
number = { 2 },
pages = { 100--118 },
issn = { 0167-6423 },
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timestamp = { 2010.12.06 },
illprojectkey = { Arcade },
for_reporting_period = { 2011 },
}

```

[BFK+10]

PDFBIB

Biallas, S., Frey, G., Kowalewski, S., Schlich, B., and Soliman, D., "Formale Verifikation von Sicherheits-Funktionsbausteinen der PLCopen auf Modell- und Code-Ebene", in *Proc. Tagungsband Entwicklung und Betrieb komplexer Automatisierungssysteme (EKA 2010)*, 2010, ifak Magdeburg, pp. 49-57.

## Formale Verifikation von Sicherheits-Funktionsbausteinen der PLCopen auf Modell- und Code-Ebene

### Bibtex entry :

```

@inproceedings { BFK+10,
  author = { Biallas, Sebastian and Frey, Georg and Kowalewski, Stefan
and Schlich, Bastian and Soliman, Doaa },
  title = { Formale Verifikation von Sicherheits-Funktionsbausteinen
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  booktitle = { Tagungsband Entwicklung und Betrieb komplexer
  Automatisierungssysteme (EKA 2010) },
  publisher = { ifak Magdeburg },
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  pages = { 49--57 },
  year = { 2010 },
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  location = { Magdeburg, Germany },
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  illprojectkey = { Arcade },
  for_reporting_period = { 2010 },
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```

[BNS10]

PDFBIB

Brauer, J., Noll, T., and Schlich, B., "Interval Analysis of Microcontroller Code using Abstract Interpretation of Hardware and Software", in *Proc. Proceedings of the 13th International Workshop on Software and Compilers for Embedded Systems (SCOPES 2010)*, 2010, ACM.

## Interval Analysis of Microcontroller Code using Abstract Interpretation of Hardware and Software

### Bibtex entry :

```
@inproceedings { BNS10,
  author = { Brauer, J{\\"o}rg and Noll, Thomas and Schlich, Bastian
},
  title = { Interval Analysis of Microcontroller Code using Abstract
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  booktitle = { Proceedings of the 13th International Workshop on
Software
  and Compilers for Embedded Systems (SCOPES 2010) },
  year = { 2010 },
  publisher = { ACM },
  url = {
http://www.embedded.rwth-aachen.de/lib/exe/fetch.php?media=bib:BNS10.pdf
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  illprojectkey = { Arcade },
  for_reporting_period = { 2010 },
}
```

[GSBK10]

[PDFBIB](#)

Gückel, D., Schlich, B., Brauer, J., and Kowalewski, S., "Synthesizing Simulators for Model Checking Microcontroller Binary Code", in *Proc. Proceedings of the 13th IEEE International Symposium on Design and Diagnostics of Electronic Circuits and Systems (DDECS 2010)*, 2010, IEEE, pp. 313-316.

## Synthesizing Simulators for Model Checking Microcontroller Binary Code

### Bibtex entry :

```
@inproceedings { GSBK10,
  author = { G{\\"u}ckel, Dominique and Schlich, Bastian and Brauer,
  J{\\"o}rg and Kowalewski, Stefan },
  title = { Synthesizing Simulators for Model Checking
Microcontroller
  Binary Code },
  booktitle = { Proceedings of the 13th IEEE International Symposium
on
  Design and Diagnostics of Electronic Circuits and Systems
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    timestamp = { 2010.03.08 },
    illprojectkey = { Arcade },
    for_reporting_period = { 2010 },
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```

[RHS+10]

[PDFBIB](#)

Reinbacher, T., Horauer, M., Schlich, B., Brauer, J., and Scheuer, F., "Model Checking Embedded Software of an Industrial Knitting Machine", *International Journal of Information Technology, Communications and Convergence*, pp. 186-205, 2010

## Model Checking Embedded Software of an Industrial Knitting Machine

### Bibtex entry :

```

@article { RHS+10,
    author = { Reinbacher, Thomas and Horauer, Martin and Schlich,
Bastian
    and Brauer, J{"o}rg and Scheuer, Florian },
    title = { Model Checking Embedded Software of an Industrial
Knitting
    Machine },
    journal = { International Journal of Information Technology,
Communications and Convergence },
    year = { 2010 },
    pages = { 186--205 },
    publisher = { Inderscience Enterprises Ltd },
    publishedas = { Online Druck },
    issn = { 2042-3217 },
    illkey = { journal },
    language = { eng },
    url = {
http://inderscience.metapress.com/content/y664g84625r780l0/fulltext.pdf
},
    timestamp = { 2010.08.15 },
    for_reporting_period = { 2010 },
}

```

[Sch10]

[PDFBIB](#)

Schlich, B., "Model Checking of Software for Microcontrollers", *ACM Transactions in Embedded*

*Computing Systems (TECS)*, vol. 9, iss. 4, pp. 1-27, 2010

## Model Checking of Software for Microcontrollers

### Bibtex entry :

```
@article { Sch10,  
  author = { Schlich, Bastian },  
  journal = { ACM Transactions in Embedded Computing Systems (TECS) },  
  title = { Model Checking of Software for Microcontrollers },  
  year = { 2010 },  
  volume = { 9 },  
  number = { 4 },  
  pages = { 1--27 },  
  issn = { 1539-9087 },  
  doi = { http://doi.acm.org/10.1145/1721695.1721702 },  
  publisher = { ACM },  
  illkey = { journal },  
  for_reporting_period = { 2010 },  
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```

[BHS09]

[PDFBIB](#)

Brauer, J., Huuck, R., and Schlich, B., "Interprocedural Pointer Analysis in Goanna", *Electronic Notes in Theoretical Computer Science*, vol. 254, p. 65, 2009, Proceedings of the 4th International Workshop on Systems Software Verification (SSV 2009)

## Interprocedural Pointer Analysis in Goanna

### Bibtex entry :

```
@article { BHS09,  
  author = { Brauer, J{"o}rg and Huuck, Ralf and Schlich, Bastian },  
  title = { Interprocedural Pointer Analysis in Goanna },  
  journal = { Electronic Notes in Theoretical Computer Science },  
  volume = { 254 },  
  pages = { 65--83 },  
  year = { 2009 },  
  note = { Proceedings of the 4th International Workshop on Systems  
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  url = { http://portal.acm.org/citation.cfm?id=1630458 },  
  illkey = { conference },  
  for_reporting_period = { Old },  
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```

[BSK09b]

[PDFBIB](#)

Brauer, J., Schlich, B., and Kowalewski, S., "Parallel and Distributed Invariant Checking of

Microcontroller Software", *Electronic Notes in Theoretical Computer Science*, vol. 254, p. 45, 2009, Proceedings of the 4th International Workshop on Systems Software Verification (SSV 2009)

## Parallel and Distributed Invariant Checking of Microcontroller Software

### Bibtex entry :

```
@article { BSK09b,  
  title = { Parallel and Distributed Invariant Checking of  
    Microcontroller Software },  
  journal = { Electronic Notes in Theoretical Computer Science },  
  volume = { 254 },  
  pages = { 45–63 },  
  year = { 2009 },  
  note = { Proceedings of the 4th International Workshop on Systems  
    Software Verification (SSV 2009) },  
  publisher = { Elsevier },  
  issn = { 1571-0661 },  
  author = { Brauer, Jörg and Schlich, Bastian and Kowalewski,  
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  illkey = { conference },  
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  for_reporting_period = { Old },  
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[BSRK09]

[PDFBIB](#)

Brauer, J., Schlich, B., Reinbacher, T., and Kowalewski, S., "Stack Bounds Analysis of Microcontroller Assembly Code", in *Proc. Workshop on Embedded Security (WESS 2009)*, Grenoble, France, 2009, ACM Press.

## Stack Bounds Analysis of Microcontroller Assembly Code

### Bibtex entry :

```
@inproceedings { BSRK09,  
  author = { Brauer, Jörg and Schlich, Bastian and Reinbacher,  
Thomas  
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  title = { Stack Bounds Analysis of Microcontroller Assembly Code },  
  booktitle = { Workshop on Embedded Security (WESS 2009), Grenoble,  
France },  
  year = { 2009 },  
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[FHST09]

[PDFBIB](#)

Fehnker, A., Huuck, R., Schlich, B., and Tapp, M., "Automatic Bug Detection in Microcontroller Software by Static Program Analysis", in *Proc. SOFSEM 2009: Theory and Practise of Computer Science, Spindleruv Mlýn, Czech Republic*, 2009, vol. 5404 in *Lecture Notes in Computer Science*, Springer, pp. 267-278.

## Automatic Bug Detection in Microcontroller Software by Static Program Analysis

### Bibtex entry :

```
@inproceedings { FHST09,
  author = { Fehnker, Ansgar and Huuck, Ralf and Schlich, Bastian and
    Tapp, Michael },
  booktitle = { SOFSEM 2009: Theory and Practise of Computer Science,
    Spindleruv Ml\ '{y}n, Czech Republic },
  doi = { 10.1007/978-3-540-95891-8_26 },
  isbn = { 978-3-540-95890-1 },
  pages = { 267--278 },
  publisher = { Springer },
  series = { Lecture Notes in Computer Science },
  title = { Automatic Bug Detection in Microcontroller Software by
    Static Program Analysis },
  volume = { 5404 },
  year = { 2009 },
  illkey = { conference },
  for_reporting_period = { Old },
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[Mit09]

[PDFBIB](#)

Mitsching, R., "Testing in the Industrial Development Process for Embedded Systems", in *Proc. Doctoral Symposium on Systems Software Verification (DS SSV'09) Real Software, Real Problems, Real Solutions*, 2009, RWTH Aachen University, pp. 23-25.

## Testing in the Industrial Development Process for Embedded Systems

### Bibtex entry :

```
@inproceedings { Mit09,
  author = { Mitsching, Ralf },
  title = { Testing in the Industrial Development Process for
    Embedded
    Systems },
  booktitle = { Doctoral Symposium on Systems Software Verification
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SSV'09) Real Software, Real Problems, Real Solutions },
year = { 2009 },
pages = { 23--25 },
publisher = { RWTH Aachen University },
editor = { Ralf Huuck and Gerwin Klein and Bastian Schlich },
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for_reporting_period = { 2010 },
}
```

[RBHS09]

[PDFBIB](#)

Reinbacher, T., Brauer, J., Horauer, M., and Schlich, B., "Refining Assembly Code Static Analysis for the Intel MCS-51 Microcontroller", in *Proc. Industrial Embedded Systems (SIES'09)*, Lausanne, Switzerland, 2009, IEEE Computer Society Press, pp. 161-170.

## Refining Assembly Code Static Analysis for the Intel MCS-51 Microcontroller

### Bibtex entry :

```
@inproceedings { RBHS09,
  author = { Reinbacher, Thomas and Brauer, J{\o}rg and Horauer,
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  booktitle = { Industrial Embedded Systems (SIES'09), Lausanne,
  Switzerland },
  doi = { 10.1109/SIES.2009.5196212 },
  isbn = { 978-1-4244-4109-9 },
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[RHS+09]

[PDFBIB](#)

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[SBWK09]

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[SK09]

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  author = { Schlich, Bastian and Kowalewski, Stefan },
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author = { Beckers, J{"o}rg and Kl{"u}nder, Daniel and
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booktitle = { Abstract State Machines, B and Z (ABZ 2008), London,
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doi = { 10.1007/978-3-540-87603-8_10 },
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  author = { Herberich, Gerlind and Noll, Thomas and Schlich, Bastian  
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[NS08]

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[RKHS08a]

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[SSK07]

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volume = { 1 },
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[SK06b]

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[SRWK06]

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[SK05]

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[SK04]

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