



## ANSIAN - ANDROID SIGNAL ANALYZER

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Secure Mobile Networking Lab  
Department of Computer Science



AnSiAn - Android Signal Analyzer  
SEEMOO Secure Networking Lab  
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Technische Universität Darmstadt  
Department of Computer Science  
Secure Mobile Networking Lab

## ABSTRACT

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## ZUSAMMENFASSUNG

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## Part I

### INTRODUCTION

The first chapter of this part gives an introduction and a motivation to this thesis, followed by a presentation of related work found in the area of physical layer security. In the third chapter, we present some definitions and background information to make it easier for the reader to quickly understand the subsequent parts of this thesis.



## INTRODUCTION

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Introduction: TODO; Explain AnSiAn

### 1.1 PROJECT DEFINITION

#### 1.1.1 *Features*

##### 1.1.1.1 *Must-Have*

- RDS (Channel Name, Radio Text, Time)
- PSK<sub>31</sub>
- Extract RDS-, Morse and PSK<sub>31</sub>-Text to file
- rad10 support (for receiving)
- sending with HackRF and rad10
  - replay I/O samples
  - generate and send morse code from text
  - FM audio modulation

##### 1.1.1.2 *Nice-to-Have*

- Walkie-Talkie Mode
- Packet Radio
  - receive
  - maybe even send?

#### 1.1.2 *Time Schedule*

##### 1.1.2.1 *Sprint 1: alpha version (due 09.06.)*

- RDS
- PSK<sub>31</sub>
- Extract RDS-, Morse and PSK<sub>31</sub>-Text to file

1.1.2.2 *Sprint 2: beta version (due 21.07.)*

- rad10 support (for receiving)
- sending with HackRF and rad10
  - replay I/O samples
  - generate and send morse code from text
  - FM audio modulation

1.1.2.3 *Sprint 3: final version (due 25.08.)*

- complete leftovers from previous sprints
- Walkie-Talkie Mode ?
- Packet Radio ?

RELATED WORK

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## Part II

### CONTRIBUTION

The contribution starts with a design chapter, where we mathematically describe the design of the physical layer security system, as well as the adaptive filter of the attacker. After the design follows the implementation on WARP nodes. Here we give an insight into the challenges of implementing the designed MIMO communication system. The last chapter concentrates on evaluating the performance of our proposed attack in simulation and practice.





DESIGN

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## IMPLEMENTATION

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EVALUATION

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### Part III

## DISCUSSION AND CONCLUSIONS

After the evaluation, we further discuss the results and give an outlook. In addition, we finish this work with conclusions.





DISCUSSION

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## CONCLUSIONS

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Part IV

APPENDIX



APPENDIX

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## ERKLÄRUNG

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Hiermit versichere ich gemäß der Allgemeinen Prüfungsbestimmungen der Technischen Universität Darmstadt (APB) § 23 (7), die vorliegende Masterarbeit ohne Hilfe Dritter und nur mit den angegebenen Quellen und Hilfsmitteln angefertigt zu haben. Alle Stellen, die aus den Quellen entnommen wurden, sind als solche kenntlich gemacht worden. Diese Arbeit hat in gleicher oder ähnlicher Form noch keiner Prüfungsbehörde vorgelegen.

*Darmstadt, 28. April 2016*

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