

# A mobile application towards preventing online sexual exploitation attacks



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# The problem

- “**Child grooming** refers to actions deliberately undertaken with the aim of befriending and establishing an emotional connection with a child”
- New forms of communication, teenagers prefer sms and chat
- Parents are very concerned

# Artemis Introduction

- Application for Android Smartphones
- Works transparently monitoring incoming hazards through sms
- Warns the parent in real time
- Does not store any communication data or personal information

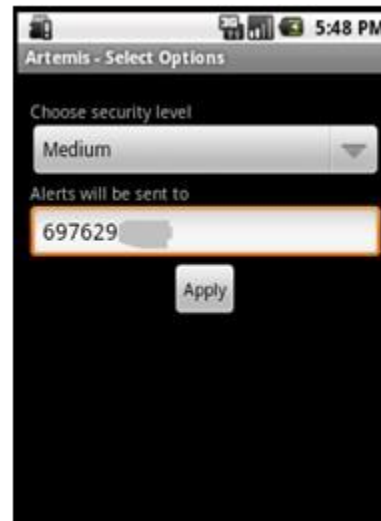
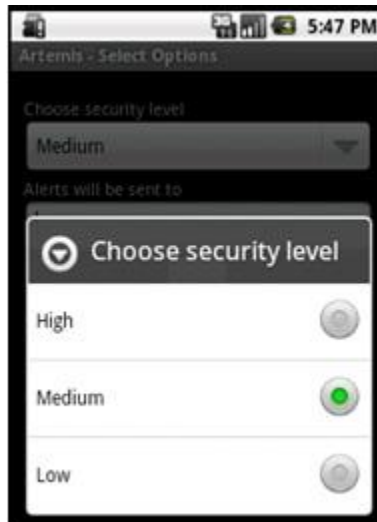
# GARS Server

- Grooming Attack Recognition Server
- Performs document classification in incoming text based on known grooming patterns
- Classification results:
  - GA: Gaining Access
  - DR: Deceptive Relationship
  - SA: Sexual Affair

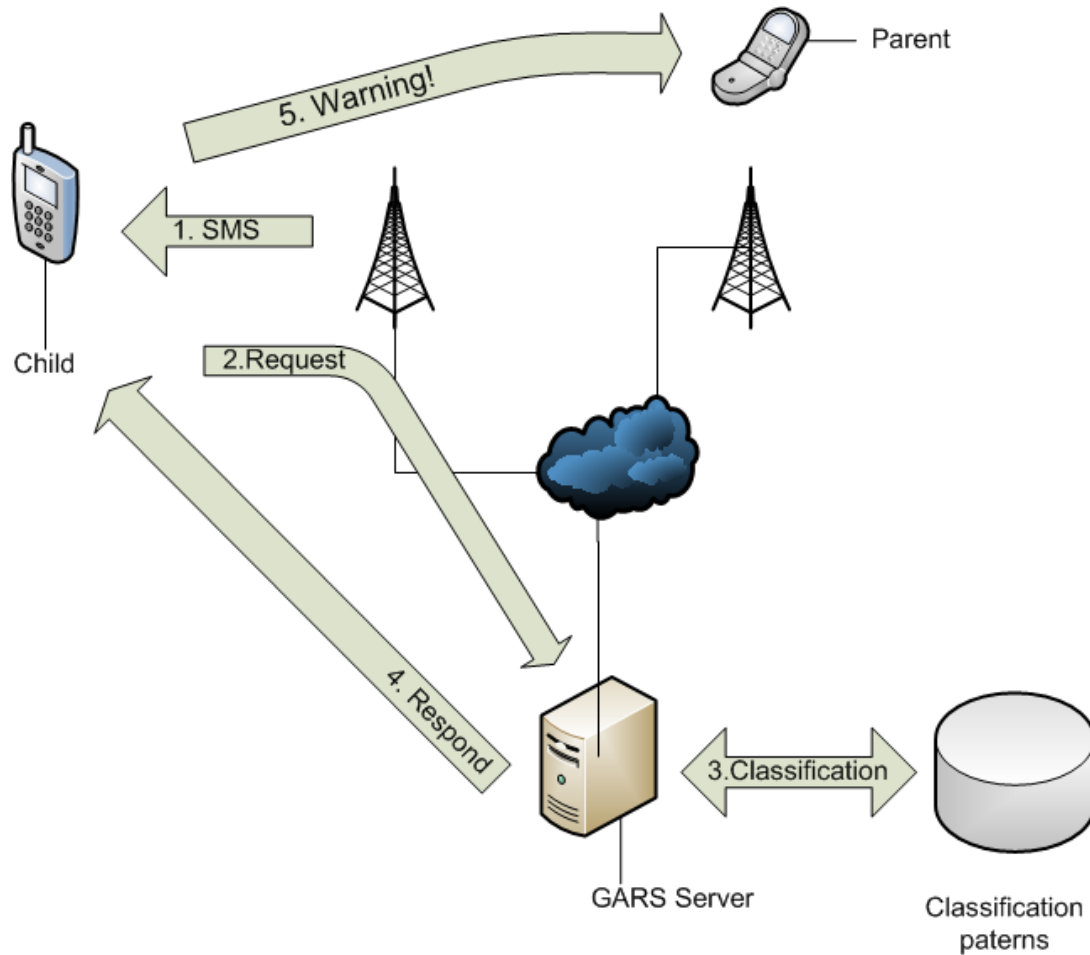
# Development

- Artemis is Developed under Android SDK emulator as well as Eclipse for code development
- During installation demands for security level option (low-medium-high)
- After installation runs transparently as service monitoring incoming sms

# Installation



# Artemis architecture



# Processes

- Each incoming message (sms) is captured and afterwards it is analyzed using the following processes:
  - stop-word removing
  - tokenization
  - Steaming
  - Send for classification
  - Result analysis



# Networking analysis

Initial sms	Characters Sent	characters		Packets (bytes)					Sum of Initial sms	Sum of sms after processing	Gain %
		Initial	After processing	1	1(After processing )	2-6	7	8			
school	school	6	6	46	46	42	92	40	388	388	0,00
No one has ever loved anyone the way everyone wants to be loved. Think deeply, you'll feel it...!! Gud evenin !	love deep feel gud evenin	110	25	150	65	40	91	40	481	396	17,7
I have so much love for you, but you're too blind to see, there's nothing more I can do, To make you stay close to me	love blind make stay close	115	26	155	66	42	91	40	496	407	17,9
Don't limit yourself. Many people limit themselves to what they think they can do. You can go as far as your mind lets you. What you believe, remember, you can achieve	limit people mind remember achieve	167	34	207	74	42	92	40	549	416	24,2

# Consideration

- Respect of communication privacy – warning message does not include personal information. Adjustable according to local legislations.
- Demands for network connection (aprx 400 bytes per sms) – possible carrier charges
- Potential false positives
- Supports only English Language

# Future work

- Next editions of Artemis will include more sophisticated techniques of grooming detection, (eg consideration of user history)
- Artemis may monitor more communication channels (chat from Facebook, Skype, MSN)
- GARS patterns will expand providing higher accuracy in document classification
- GARS will work as cluster for optimized network performance (avoiding timeouts)
- Optimized threshold control (according to age – gender)

# Questions



More information about Artemis and downloads can be found at:

<http://infosec.uom.gr/en/archives/547>

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