

```
1  /**
2  * Author: Technikon Forschungs- und Planungsgesellschaft mbH
3  * Description: Retrofit Security of Embedded Systems for
4  * Critical Infrastructure - Master's Degree Graduation Project
5  */
6
7  var qualifications;
8
9  function getJob ( qualifications ) {
10   if (
11     qualifications.includes ( 'affection-for-IoT' ) &&
12     qualifications.includes ( 'mbed-development-know-how' ) &&
13     qualifications.includes ( 'out-of-the-box-thinking' ) )
14   {
15     sendJobApplication ( 'jobs@technikon.com' );
16     return true;
17   }
18   else
19   {
20     openURL ( 'https://www.technikon.com/jobs' );
21     return;
22   }
23 }
```



# Retrofit Security of Embedded Systems for Critical Infrastructures

Master's Degree Graduation Project

## var motivation;

Our international research project, RESCURE (E11897), aims to retrofit the security in large scale IoT Critical Infrastructures (CIs).

The goal is to deliver a fully-fledged low-cost IoT security solution based on patented hardware technology, which provides secure storage and root-of-trust. RESCURE will ensure that low-cost individual chips are not vulnerable to attacks and as a result, makes IoT devices and communications between them secure.

On top, we aim to deliver end-to-end security protocols and a key management scheme that scale on CIs as well as to develop attack and failure detection mechanisms to identify abnormal activity within the IoT-to-Cloud intercommunication.

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## function project\_description () {

- % You will work tight on Internet-of-Things-related topics applicable for critical domains and infrastructures, such as the industrial sensing environment.
- % You will be part of the development team when implementing security features and crypto graphic services for common-used embedded devices as well as developing backend services to efficiently manage the IoT-to-Cloud connectivity.
- % You will get the possibilities to perform studies on security-relevant building blocks for next-generation IoT infrastructures in order to increase your experience in both, the theoretical and practical manner.
- % You will be able to accompany the path from the project idea, over specifying use-cases and application scenarios, to implementing a prototype based on hardware-entangled security features.

We are offering two separate and independent projects, which should result in a research report or a scientific paper. Coincidentally, the projects would fit as graduations projects (Master's degree) as well as semester abroad projects of about 5 months (1 semester).

Our staff will provide technical guidance. Moreover, candidates can drive on scientific guidance provided by our partner, the Technical University of Eindhoven.

In detail, the following two areas of interest are open as graduation project:

- #1 Topic:** Investigations on lightweight implementation of anti-aging of SRAMs including post-processing and error-correcting codes dedicated towards the IoT domain.
- #2 Topic:** Intrusion Monitoring and Detection for (cloud-based) backend, which manages IoT nodes in a secure and scalable manner.

}

## function getJob () { return ( '€' )

We consider a gross payment sum of EUR 10.000,00 for each project assuming that the candidate is eligible for receiving payments either as "Werkstudent" or "Student" under the Austrian law for employment.

}

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## environment.includes (

You will be working for the research department of TECHNIKON and become part of the **RESCURE project team**. You will be granted access to our laboratory equipment and security hardware.

)

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## if ( qualifications ) {

- % Profound technical knowledge and experience in terms of IoT and embedded systems
  - % Interest on intrinsic hardware security and relevant upcoming topics in the embedded world
  - % Understanding for cryptographic services as well as detection mechanisms for intrusion, attacks and failure with respect to backend systems
  - % Background on signal processing, error correcting codes and information theory
  - % Well-found English proficiency, capacity for teamwork as well as personal commitment and sense of responsibility
- 

## } return contact;

Attracted your interest? Send your questions or even better your application to:  
**Mr. DI Mario Muenzer** at [rescure@technikon.com](mailto:rescure@technikon.com).

