

contact

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France

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languages

French mother tongue
English fluency
♥ Spanish bilingual
Mandarin basic

research interests

♥ Internet of Things
Visible Light Comm.
Machine Learning
♥ Bluetooth LE
Software Defined Radio
Lightweight Crypto.
♥ IoT Cybersecurity
Wireless Comm.

programming

♥ C/C++, Golang
Python, Jupyter,
TensorFlow,
TensorFlow Lite
Java, Kotlin
Android SDK/NDK
Swift & iOS SDK
♥ Embedded Linux &
Android
ARM Cortex M MCUs
Zephyr, Contiki, RIOT
Docker, SysAdmin,
Agile
♥ Git, Gitlab, CI/CD
L^AT_EX

work experience

- 2017–Now **Rtone** Lyon, France
Director of Research - Cybersecurity Leader
Research project management: H2020, SME Instrument, Eurostars, ANR
Ongoing projects:
 - FUI PACLIDO (2017-20): Lightweight Cryptography for IoT. Detection of cyber-attack on IoT devices using Machine Learning
 - H2020 SDR4IoT (2020-21): IoT devices authentication and fingerprinting with Software Defined Radio and Machine Learning
 - ANACONDA (2020-2022): Automation of IoT device cybersecurity assessmentIoT Cybersecurity consulting
Teaching: Embedded Systems & IoT, Bluetooth, IoT cybersecurity
Speaker in international tech conferences: Devovx (FR/BE/MA), FOSDEM, MixIT, ...
Technical writing
- 2015–2018 **Rtone** Lyon, France
PhD student
PhD.: Bidirectional Visible Light Communications for the Internet of Things
Working toward bi-directional Device-to-Device communication using LED lights and smartphones. European patent granted
- 2014– 2017 **Rtone** Lyon, France
Embedded Software and Research Engineer
Micro-controller programming:
 - Body-Area-Network development in a sport context (802.15.4)
 - Low Power management and optimization
 - STM32, ARM Cortex M0+, M0 and M3Bluetooth Low Energy firmware development on Nordic, Bluegiga SoC
Embedded Linux 3G Gateway: C++, Yocto Project
Mobile Applications :
 - Bluetooth Low Energy, Ultrasounds
 - iOS SDK using Objective C and Swift
 - Android SDK and NDK
 - Cross-platform using Apache Cordova and IonicWeb Applications :
 - Evolution and improvement of various Java WebApp (Spring, Hibernate, GWT)
 - OSGI Bundle development for the Eclipse Kura project using Eclipse Equinox
- H1 2015 **ENTEL, Universidad Politecnica de Cataluna** Barcelona, Spain
Light sensor development for the Ara platform
Research project within the Wireless Network Group, 5 months :
 - Visible Light Communications (VLC) state of the art
 - Development of a VLC front-end for the Google Ara modular smartphone
 - Hardware design and firmware programming in C
 - Android SDK and NDK programming
- 2013– Now **Freelance Developer** Lyon, France
Mobile and Web applications developer
Various mobile and web applications development using technologies such as Java, Swift, Symphony2/3, Angular, Polymer
Most relevant projects:
 - Meeting reporting Android application for a knowledge management project (TechCico Laboratory, Université Technologique de Troyes)
 - Intranet web application enabling energy consumption monitoring in a factory (Michelin Troyes)
 - Web Application allowing fire protection system scaling and planning
 - Electronic medical recording system development based on OpenMRS and Bahmni

education

2015–2018 **PhD.** Bidirectional Visible Light Communications for the Internet of Things CITI Lab
INRIA AGORA Team, funded by Rtone (French CIFRE fellowship)

2009–2015 **M.Eng.** in Computer Science and Telecommunications. INSA de Lyon
Fifth year final semester abroad at the UPC-ETSETB, Spain
First two years in Asian international section

publications

Journals and international conferences proceedings

A. Duque, A. Lahmadi, N. Heraief, and J. Franco, **"MitM Attack Detection in BLE Networks using Reconstruction and Classification Machine Learning Techniques"**

in *Proceedings of the 2nd Workshop on Machine Learning for Cybersecurity MLCS'20*, (Ghent, Belgium)

A. Duque, R. Stanica, H. Rivano, and A. Desportes, **"Analytical and simulation tools for optical camera communications"**

in *Elsevier Computer Communications* Vol. 120, pp. 52-62, July 2020

A. Duque, R. Stanica, H. Rivano, and A. Desportes, **"Performance Evaluation of LED-to-Camera Communications"**

in *Proceedings of the 22nd ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems MSWiM'19*, (Miami Beach, FL, USA)

A. Duque, R. Stanica, H. Rivano, C. Goursaud, and A. Desportes, **"Poster: Insights into RGB-LED to Smartphone Communication"**

in *Proceedings of the 2018 International Conference on Embedded Wireless Systems and Networks EWSN'18*, (Madrid, Spain)

A. Duque, R. Stanica, H. Rivano, and A. Desportes, **"Decoding methods in LED-to-smartphone bidirectional communication for the IoT"**

in *Proceedings of the 2018 Global LIFI Congress (GLC) GLC'18*, (Paris, France)

A. Duque, R. Stanica, H. Rivano, and A. Desportes, **"SeedLight: Hardening LED-to-Camera Communication with Random Linear Coding"**

in *Proceedings of the 4th Workshop on Visible Light Communication System VLCS'17*, (Snowbird, Utah, USA)

A. Duque, R. Stanica, H. Rivano, and A. Desportes, **"Demo : Off-the-shelf bi-directional visible light communication module for IoT devices and smartphones"**

in *Proceedings of the 2017 International Conference on Embedded Wireless Systems and Networks EWSN'17*, (Uppsala, Sweden), 2017

A. Duque, R. Stanica, H. Rivano, and A. Desportes, **"Unleashing the power of led- to-camera communications for iot devices"**

in *Proceedings of the 3rd Workshop on Visible Light Communication System VLCS'16*, (New York, NY, USA)

A. Duque, R. Stanica, H. Rivano, and A. Desportes, **"Demo: Unleashing the power of led- to-camera communications for iot devices"**

in *Proceedings of the 3rd Workshop on Visible Light Communication Systems VLCS'16*, (New York, NY, USA)

Patents

A. Duque, A. Desportes, R. Stanica, H. Rivano. 2017. **"Procédés de communication en lumière visible"**
European Patent N° EP18157382, Priority Date: February 17th 2017

Technical press

A. Duque, **“TensorFlow Lite im Vertical Farming”**
in *Linux Magazin* April 2020

A. Duque, **“Run TensorFlow models on edge devices”**
in *ADMIN Magazine* Issue 57, May 2020

A. Duque, **“Machine Learning sur des objets connectés avec TensorFlow Lite pour l’agriculture verticale”**
in *Linux Magazine France* Issue 236, July 2020

certifications & awards

June 2020 **TensorFlow Developer Certificate**
ID 8TGQMHD85RS7

Google

Integrating machine learning into tools and applications. Understanding of building TensorFlow models using Computer Vision, Convolutional Neural Networks, Natural Language Processing, and real-world image data and strategies.

interests

professional : technological watch, free and open-source software activist, contributor at OpenMRS, Google Summer of Code 2014 and 2016 student

sport : triathlon, duathlon, cycling, athletics

culture : reading, practicing the classical and electric guitar