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🏠 Rue Jean-François Boch, 1244 Luxembourg  
📍 1994, Egyptian, male

## 📄 KEY SKILLS

- **</> Programming:** C, Matlab, VHDL, Unix/Linux shell scripting,  $\LaTeX$
- **⚙️ Software Process:** Git, Travis CI, Jenkins, Docker, Doxygen
- **🖥️ OS:** Unix/Linux, OS X, Windows

## 🔄 EXPERIENCE

- **SnT** Luxembourg, Kirchberg  
*5G-NTN Researcher* Nov. 2020 - Current
  - : Conducting RnD activities in the spectrum of Non-Terrestrial Network for 5G and beyond.
  - : Developing a 5G based testbed to help jumpstart 5G terrestrial communication use cases in uRLLC, mMTC, and eMBB.
  - : Enhanced 4G/5G stack for Non-Terrestrial Network use-cases by building on top of the open source-based ecosystem solutions (OAI5G, MAGMA, srsRAN, GNURadio)

*Key tools* C GNURadio OAI5G UHD IIO linux CI/CD Git Docker  $\LaTeX$
- **TeCIP: Scuola Superiore Sant'Anna** Italy, Pisa  
*RADAR Engineer* Aug. 2019 - Sep. 2020
  - : Developed, tested, and evaluated mmWave FMCW 77-81GHz radar for automotive systems applications.
  - : Designed continuous integration framework to provide smooth developer-friendly workflows for TI AWR1843 sensor
  - : Configured the FMCW waveform (sensing profile, chirp & frame) to meet the Short Range Radar (*SRR*) profile use cases.
  - : Enabled signal processing algorithms i.e FFT for objects mapping and localization (Range, Velocity, and AoA).
  - : Achieved the design specs with a max range 30m & 4.3cm resolution, max velocity 36kmph & 0.32mps resolution.

*Key tools* C Matlab YAML Bash TI-RTOS Travis Doxygen Code Composer mmWaveSDK  $\LaTeX$
- **SmartCI Research Center** Egypt, Alexandria  
*R&D Engineer* Aug. 2017 - Oct. 2018
  - : Contributed to Alexandria University campus construction with build-out of cellular network on-top of software-defined radios using USRPx300, USRPB210 & RTL-SDR.
  - : Upgraded the Cognitive Radio Cloud to be LTE enabled & compliant (1.4 to 20 MHz Bandwidth).
  - : Co-authored the training material and introduced students and researchers in the use of the platform/Cloud.
  - : Released custom disk images for GNURadio and OpenAirInterface5G.
  - : Implemented 3 classes of software radio applications using GNURadio (Analog, Digital, & Wireless Communication)
  - : Designed LTE Rel-10 RAN based experiments without core (S1 Interface) integration.

*Key tools* GNURadio OAI5G SDR Matlab VNC Virtualbox
- **AUC: American University in Cairo** Egypt, Cairo  
*Research Assistant* Feb. 2018 - Oct. 2018
  - : Designed (Rate Aware- Instantly Decodable Network Coding) RA-IDNC using graph theory and greedy algorithm for a use-case of a single Base-Station, 20 users, and 20 files.
  - : Achieved higher throughput by decreasing the overall decoding completion time from 80 to 20 time-slots.

*Key tools* Matlab  $\LaTeX$

## 🎓 EDUCATION

- **CIC — Canadian International College** Egypt, Cairo  
*Bachelor of Electrical Engineering; Major: Telecommunication Engineering;* Sep. 2012 - May. 2017  
**Distinction with Honor; CGPA:(3.72/4.00)**  
Thesis *Cognitive Radio Network*

## ⚙️ TECHNICAL SKILLS & PROFICIENCY

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- : Best understanding of 3GPP/ETSI standards in the telco space: 4G/5G-NR including Rel15, Rel16 and Rel17.
- : Vertical and Working Knowledge of beyond 5G and future wireless technology in terrestrial and non-terrestrial.
- : Working Experience with Open-Source initiatives (ORAN and OSA) and familiarity with (ONAP and OSM)
- : Experience with in Real-Time systems, Linux Kernels, CPU scheduling, resource allocation, and concurrent programming.
- : Proficiency in low-level software development in C.
- : RTL Programming in VHDL.
- : Daily-usage of Configuration Management and CI/CD tools using git, TravisCI, & Jenkins under Unix/Linux environment.
- : Experience in developing cloud-based applications which can be deployed on cloud and container technologies (OpenStack, VMWare, VBox, Kubernetes, and Docker).

## REFERENCES

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- [KAQ+21] O. Kodheli, **A. Astro**, J. Querol, M. Gholamian, S. Kumar, N. Maturo, and S. Chatzinotas, “Random access procedure over non-terrestrial networks: From theory to practice,” *IEEE Access*, pp. 1–1, 2021. DOI: 10.1109/ACCESS.2021.3101291.
- [QAB+21] J. Querol, **A. Astro**, Z. Bokal, J. Duncan, M. Gholamian, O. Kodheli, J. Krivochiza, S. Kumar, C. Martinez, N. Maturo, L. Rana, J. Thoemel, S. Chatzinotas, M. Olivares-Mendez, T. Van Dam, and B. Ottersten, “5g-spacelab,” in *Space Resource Week*, Luxembourg: ESRIC - European Space Resources Innovation Centre, 2021. [Online]. Available: <https://orbilu.uni.lu/bitstream/10993/47772/1/Poster%205G-SpaceLab%20SRW21.pdf>.
- [AKA+19] **A. Astro**, O. Khaled, A. Alaa, M. Ali, I. Mohy, and A. ElDieb, “Real-time spectrum occupancy prediction,” in *2nd International Conference on Wireless Intelligent and Distributed Environment for Communication*, I. Woungang and S. K. Dhurandher, Eds., Cham: Springer International Publishing, 2019, pp. 219–232, ISBN: 978-3-030-11437-4. [Online]. Available: [https://link.springer.com/chapter/10.1007/978-3-030-11437-4\\_17](https://link.springer.com/chapter/10.1007/978-3-030-11437-4_17).

## 🗣️ LANGUAGES

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- **English:** Fluent
- **Arabic:** Native
- **French:** Basic

