



ESR Project title: ESR10: Edge computing and communications for Light-based IoT (LIoT) [ESR10]

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Application deadline: **May 31, 2021**

ESR Project Description: The project aims at developing Light-based IoT (LIoT), creating energy autonomous nodes that can communicate with light (and also radio, if required). Nodes are connected to the Internet as soon as they are exposed to light, i.e., exploiting the “expose and connect” paradigm. Novel LIoT concept to be developed, implemented and characterized. The use of printed electronics will be considered in the implementation. The objectives of ESR10 are: (1) to develop LIoT, or “expose and connect-concept”. (2) Feasibility: Use printed electronics technologies to implement a demonstrator of the concept; (3) To characterize the communications and ML performance and (4) To create a practical application dealing with source data sensing, edge processing and transmission.

Expected Results:

(1) Demonstration of the concept; (2) The use of printed electronics technology to implement the concept; (3) Optimization of the splitting between computation at node and network.

Supervision and Mobility Program:

Once hired, the candidate will:

- work at Centre for Wireless Communications, University of Oulu, Finland, performing full-time research under the supervision of Prof. Marcos Katz.
- be enrolled in the PhD program at University of Oulu, under the supervision of Prof.. Marcos Katz.
- will additionally pursue two secondments at KUL and WSE, for a respective duration of five and five months.

Required, Preferred and Desired Prerequisites/Skills:¹

- **Required:** At the time of recruitment, the applicant must not have lived in [Country-hosting-the-ESR] for more than 12 months in the previous 36 months (3 years).
- **Required:** No more than 4 years spent in research/work activities after the achievement of the MS degree.
- **Preferred:** A Master’s degree in Telecommunications, Computer Science, Data Science or equivalent.
- **Preferred:** Solid background in wireless communications

¹ **Required**, means mandatory to pass the eligibility check. **Preferred**, means highly welcome and recommended. **Desired**, means additional, not strictly needed, but still very much appreciated.



- **Preferred:** Good knowledge of electronics (analog and digital)
- **Preferred:** Experience in designing and implementing circuitry
- **Preferred:** previous experience implementing and testing systems
- **Preferred:** Open-mindedness, strong integration skills and team spirit.
- **Desired:** Knowledge on optoelectronics and optics is highly appreciated
- **Desired:** Basic knowledge of signal processing
- **Preferred:** Very good communication skills in oral and written English.
- **Desired:** Highly motivated to design, hands-on implementation and testing novel ideas and concepts.