Competences in probability, statistics, optimization, and mathematical modeling are essential. Solid skills in Main activities for IoT environments,” Pervasive and Mobile Computing 51 (2018) 27–42


Many deployed applications, like recommendation systems, voice assistants, and ad-targeting, need to serve predictions from machine learning (ML) models in less than 20ms [1]. Future wireless services like connected and autonomous cars, industrial robotics, mobile gaming, augmented and virtual reality have even stricter latency requirements, often below 10 ms [2] and below 1ms for what is now called the tactile internet [3]. A key element to satisfy such constraints is to run these services closer to the user.

In particular, it will be needed to run ML prediction services at the edge of the network without the computing and storage capabilities of the cloud.

The postdoc will investigate how the quality of the predictions can be traded off with latency through two different approaches. The first one is to cache at the edge ML answers to previous queries. Cached answers to “close enough” queries can then be provided to new queries. Local sensitive hashing is a possible way to evaluate the distance between queries [4]. The second approach is instead to train a complex ML model in the cloud, but then run a down-scaled version at the edge. To this purpose, transfer learning techniques can be used to generate models with different time-space complexity [5].

The duration of this postdoc is 18 months.

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Main activities
Research activities.

Skills
Competences in probability, statistics, optimization, and mathematical modeling are essential. Solid
programming and IT skills are necessary, along with strong communication abilities.

Ideally, we are looking for two possible profiles:

- experts on algorithms and competitive analysis
- experts on machine learning

**Benefits package**

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking (after 6 months of employment) and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage

**Remuneration**

Gross Salary: 2650 brutto per month