

Titolo: Artificial Intelligence-Based Solutions for Internet-of-Things Software Development

1. TOPIC

The development of IoT applications at the edge requires the development of software performing data processing while using resources in an efficient way. Recent works demonstrated that an AI approach can help designing efficient algorithms leveraging on analysis of the data flow and the processing tasks. For instance, the use of language models can help the development of code optimized for specific IoT devices, optimizing data flow and resource usage. However, there is still a lot of research to be done in order to enable the development of a AI-based framework for efficient code execution on IoT nodes based on the analysis of the tasks, their structure and their use of data.

2. RESEARCH ACTIVITY (Attività di ricerca)

The research activity will concentrate on the development of a framework for the support of automatic software development for IoT nodes, specifically concerning data-driven applications involved in smart city and smart village use cases. Applications related to the field of energy distribution systems, mobility, smart agriculture will be adopted as benchmarks. The selection of a set of specific tasks is relevant as the approach is based on training and test on a wide dataset of tasks.

3. ACTIVITY PLAN

The researcher will first consist in a review of state of art of techniques for AI-based software development. Then the development of the AI network will follow, including the training using specific dataset of data-driven IoT based applications will be applied. Finally, the refinement of the methodology and comparison with state of art solutions will be performed. The research activity will be done in the context the RURACTIVE project and aligned with PNRR objectives.