

1st Workshop on AI for Public Administration

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Abstract

This volume contains the papers presented at the 1st Workshop on Artificial Intelligence for Public Administration (AIxPA), held as part of the 21th International Conference of the Italian Association for Artificial Intelligence (AIxIA). The workshop took place on December 2nd at the venue of the main conference, Udine. There were 6 papers submitted for peer-review. Out of these, 6 papers were accepted for this volume, 5 as regular papers and 1 as short paper.

Keywords

Artificial Intelligence, Public Administration, E-Procurement, E-Government,

1. Preface

Public procurement in general, and innovation procurement in particular, is a strategic tool at the disposal of economic development policies and represents a powerful instrument for the investment of public funds. The EU's 2021-2027 long-term budget and NextGenerationEU Initiative have allocated 82.47 billion to Public Administrations. In this framework, Artificial Intelligence technologies represent a new frontier for development and growth. The use of AI by public administrations is growing and AI technologies could significantly improve the effectiveness and efficiency of public administrations. AI is becoming a more mature technology and public administrations are reflecting on how to move beyond pilots and adopt AI solutions in their daily activities. The potential benefits of AI technologies for the public sector are massive, but they are accompanied by some serious risks which must be avoided. The use of AI within government comes with additional ethical considerations due to its unique role, legal status, and expectations compared with the private sector. Indeed, several research areas can be involved in this domain of applications, e.g.:

- Knowledge representation
- Automated reasoning

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CEUR Workshop Proceedings (CEUR-WS.org)

- Common sense reasoning
- Planning and Scheduling
- Searching
- Optimization
- Machine Learning
- Natural Language Processing
- Computer Vision
- Multi-Agent systems
- Robotics and Automation
- Connected and Automated vehicles
- AI Services
- AI Ethics
- AI Philosophy

Given the reasons highlighted above, we consider highly valuable to provide AIxIA participants with a forum to share their ideas about AI in the public sector and help them grow.

This workshop is also supported by InnovaPuglia S.p.a., which has always been committed to the dissemination of ICT in the Apulian territory. The main aim is to provide a broad overview of recent activities in the field of e-procurement and e-tendering in Italy and provide participants a forum to share their ideas and make them grow.

1.1. Summary of the Workshop

The main area of interest discussed during the workshop was the domain of NLP (Natural Language Processing) in the form of textual data, in fact 4 of the 6 accepted papers focused their research on this topic. It is also relevant to note that 2 of the 6 papers proposed the use of AI (Artificial Intelligence) applied to the field of AECO (Architecture, Engineering, Contrusion and Operation). Below is a summary of each paper accepted for the workshop:

- **Building Transparency and Robustness of AI/ADM Management in Public Sector:**
The paper addresses possible problems and risks due to the spread and adoption of artificial intelligence systems in many productive sectors and especially in the public sector. It highlights what could be the main emerging issues and introduces possible best practices to address the identified challenges.
- **Multi-Label Classification of Bills from the Italian Senate:**
In this work, the authors introduce a model for the classification of Italian Senate bills. Further, the paper describes a new dataset of bills annotated with labels referring to TESEO, the thesaurus used by the Italian Senate.
- **ArchiBERTo: a hierarchization quality objectives NLP tool in the Italian Architecture, Engineering and Construction sector:**
The paper proposes the application of a language model (Google BERT) specifically trained for the elaboration of Design Guidance Documents (DIPs), pivotal documents in the pre-design stages of the construction design and procurement process in Italy. Specifically, the authors propose the use of the aforementioned model to elaborate and

translate the DIPs' quality objective phrases into a hierarchical list of objectives and criteria.

- **Evaluating pre-trained Transformers on Italian administrative texts:**

The paper starting point is that a language model specifically built for the Italian administrative domain is still lacking. The goal of the work presented in the paper is to explore the use of generic models pre-trained on general text data for the Italian PA.

- **Understanding Italian Administrative Texts: A Reader-oriented Study for Text Readability and Simplification:**

The paper proposes a study about the comprehension of administrative texts. The authors take into account both the participants' background and text simplification. They observe that text simplification does not affect text comprehension, while participants' background (digitalization, education level, Italian proficiency) has some impact on the understanding of administrative texts.

- **Leveraging Digital Twins to enhance Green Public Procurement in AECO industry:**

The paper aims to define a methodology to develop Digital Twin Prototypes (DTPs) starting from the bidding models. The main goal is to integrate several DTPs and Artificial Intelligence to automatize the MEAT (Most Economic Advantageous Tender) procedure and promote Green Public Procurement, providing an optimal and more objective data-driven awarding system and criteria weighting.

2. Workshop Organization

Chairs:

- Pasquale Lops - *Dept. of Computer Science, Univeristy of Bari Aldo Moro, Bari, Italy*
- Pierpaolo Basile - *Dept. of Computer Science, Univeristy of Bari Aldo Moro, Bari, Italy*
- Lucia Siciliani - *Dept. of Computer Science, Univeristy of Bari Aldo Moro, Bari, Italy*
- Vincenzo Taccardi - *Dept. of Computer Science, Univeristy of Bari Aldo Moro, Bari, Italy*
- Marco Di Ciano - *Dept. Research and Development, Innovapuglia S.p.A., Bari, Italy*
- Nicola Lopane - *Regione Puglia, Bari, Italy*

Proceeding Chairs:

- Vincenzo Taccardi - *Dept. of Computer Science, Univeristy of Bari Aldo Moro, Bari, Italy*

Web Chairs:

- Lucia Siciliani - *Dept. of Computer Science, Univeristy of Bari Aldo Moro, Bari, Italy*

Program Committee:

- Fabio Gasparetti - *Roma Tre University, Italy*
- Maurizio Lenzerini - *Sapienza University of Rome, Italy*

- Pietro Leo - *IBM Executive Architect - IBM Italy CTO for Big Data Analytics & Watson, Italy*
- Giuseppe Marziale - *Regione Puglia, Italy*
- Noemi Mauro - *University of Torino, Italy*
- Paolo Merialdo - *Roma Tre University, Italy*
- Lucio Narducci - *Polytechnic University of Bari, Italy*
- Marco Polignano - *Department of Computer Science, University of Bari Aldo Moro, Italy*
- Giuseppe Sansonetti - *Roma Tre University, Italy*
- Giovanni Semeraro - *Department of Computer Science, University of Bari Aldo Moro, Italy*

2.1. Website

All workshop material including schedule and news are available on the workshop website at <https://aixpa.github.io/>.

3. Table of Contents

The Program Committee (PC) received a total of 6 submissions. Each paper was peer-reviewed by at least three PC members, by following a single-blind reviewing process. The committee decided to accept 6 papers: 5 regular papers (i.e., 12+ pages), 1 short paper.

Invited Talks

- *Rosa Meo, Roberto Nai, Paolo Pasteris.*
What Can Machine Learning Do for the Public Procurement?
- *Monica Messa, Marco Di Ciano, Giuseppe Marziale, Nicola Lopane, Antonio Scaramuzzi.*
Artificial Intelligence and Public Procurement: Pilot Applications for the Apulia Regional Central Purchasing Body

Short Papers

- *Iwona Karkliniewska.*
Building Transparency and Robustness of AI/ADM Management in Public Sector

Full Papers

- *Andrea De Angelis, Vincenzo di Cicco, Giovanni Lalle, Carlo Marchetti and Paolo Merialdo.*
Multi-Label Classification of Bills from the Italian Senate
- *Mirko Locatelli, Lavinia Chiara Tagliabue and Giuseppe Martino Di Giuda.*
ArchiBERTo: a hierarchization quality objectives NLP tool in the Italian Architecture, Engineering and Construction sector
- *Serena Auriemma, Martina Miliani, Alessandro Bondielli, Lucia C. Passaro and Alessandro Lenci.*
Evaluating pre-trained Transformers on Italian administrative texts

- *Martina Miliani, Marco Senaldi, Gianluca Lebani and Alessandro Lenci.*
Understanding Italian Administrative Texts: A Reader-Oriented Study for Readability Assessment and Text Simplification
- *Silvia Meschini, Giuseppe Martino Di Giuda and Lavinia Chiara Tagliabue.*
Leveraging Digital Twins to enhance Green Public Procurement in AECO industry