

**ESCUELA POLITÉCNICA SUPERIOR DE MONDRAGON
UNIBERTSITATEA**
MONDRAGON UNIBERTSITATEKO GOI ESKOLA POLITEKNIKOA
MONDRAGON UNIVERSITY FACULTY OF ENGINEERING

Trabajo presentado para la obtención del título de

Titulua eskuratzeko lana

Final degree project for taking the degree of

GRADO EN INGENIERÍA EN INFORMÁTICA
INFORMATIKAKO INGENIARITZA GRADUA
DEGREE IN COMPUTER ENGINEERING

Título del Trabajo *Lanaren izenburua* Project Topic

**RUNTIME VERIFICATION FOR SPATIO-TEMPORAL PROPERTIES (WITH
AGGREGATED OPERATORS)**

Autor *Egilea* Author

OIHANA GARCIA ANACABE

Curso *Ikasturtea* Year

2021/2022

Título del Trabajo *Lanaren izenburua* Project Topic

**RUNTIME VERIFICATION FOR SPATIO-TEMPORAL
PROPERTIES (WITH AGGREGATED OPERATORS)**

Nombre y apellidos del autor

Egilearen izen-abizenak

Author's name and surnames

GARCIA ANACABE, OIHANA

Nombre y apellidos del/los director/es del trabajo

Zuzendariaren/zuzendarien izen-abizenak

Project director's name and surnames

EZIO BARTOCCI

ILLARRAMENDI, MIREN

Lugar donde se realiza el trabajo

Lana egin deneko lekua

Company where the project is being developed

TU WIEN

Curso académico

Ikasturtea

Academic year

2021/2022



El autor/la autora del Trabajo Fin de Grado, autoriza a la Escuela Politécnica Superior de Mondragon Unibertsitatea, con carácter gratuito y con fines exclusivamente de investigación y docencia, los derechos de reproducción y comunicación pública de este documento siempre que: se cite el autor/la autora original, el uso que se haga de la obra no sea comercial y no se cree una obra derivada a partir del original.

Gradu Bukaerako Lanaren egileak, baimena ematen dio Mondragon Unibertsitateko Goi Eskola Politeknikoari Gradu Bukaerako Lanari jendeaurrean zabalkundea emateko eta erreproduzitzeko; soilik ikerketan eta hezkuntzan erabiltzeko eta doakoa izateko baldintzarekin. Baimendutako erabilera honetan, egilea nor den azaldu beharko da beti, eragotzita egongo da erabilera komertziala baita lan originaletatik lan berriak eratortzea ere.

Index

1. Introduction.....	2
1.1. Project definition.....	¡Error! Marcador no definido.
2. Product specifications and requirements	3
2.1. Description of the service	3
2.2. Resources and materials	3
2.3. Tests and trials	3
2.4. Conditions for the implementation of the project.....	3
3. Case study	¡Error! Marcador no definido.
4.....	3

1. Introduction

Cyber Physical Systems

In our live, we are surrounded by CPSs and SoCPSs due to an increasing number of intelligent systems that involve safety, life and business-critical requirements in domains such as transportation, healthcare or home equipment.

Runtime Verification

Monitoring information related to the internal status of the CPSs at runtime can anticipate the occurrence of failures. This makes it possible to take corrective actions earlier and prevent faulty scenarios.

1.1. Objectives

Dfsdf

1.2. Project phases

Spatio-temporal properties

STREL...

2. Product specifications and requirements

The scope of the work is monitoring spatio-temporal properties using logic-based specification languages. Goal of the student work is to evaluate existing technologies for Runtime Verification of Spatio-Temporal properties over smart cities such as SaSTL. Further, to identify best practices and implement a demonstration methodology based on one of the use-cases defined in the project. Lastly, the method will be tested in order to establish a grade of improvement compared to earlier and state-of-the-art techniques. Writing a technical report on the work performed and the achieved results.

2.1. Description of the service

2.2. Resources and materials

2.2.1. Hardware

sdfghj

2.2.2. Software

sdfgh

2.3. Tests and trials

2.4. Conditions for the implementation of the project

2.5. Legal aspects

General Data Protection Regulation (GDPR):

3. State of the art

4. Office use case

5. Development (subject to change)