

Emergency Response Multi-Agent System

Design Presentation

Team Name

November 1, 2024

Outline

- 1 Introduction
- 2 City Selection
- 3 Environment
- 4 Tools
- 5 Agent Crews
 - Emergency Services
 - Firefighters
 - Medical Services
 - Forensics Team
 - Public Communications

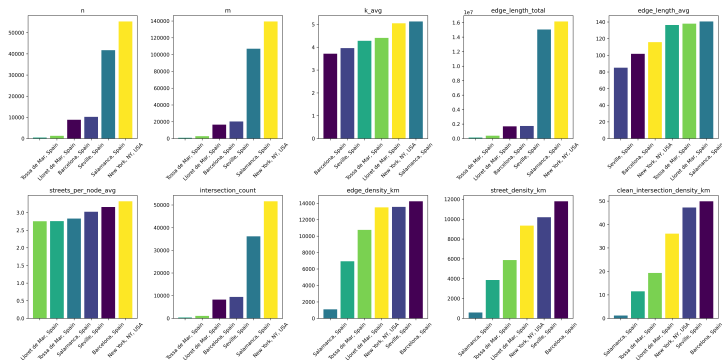
Introduction

- Multi-agent system for fire-related emergencies in Lloret de Mar
- Five specialized response teams using CrewAI:
 - Emergency services
 - Medical services
 - Firefighters
 - Public communications
 - Forensics team

City Selection

- Selection criteria
- Candidate cities
- Evaluation metrics
- Final selection: Lloret de Mar

Map Analysis



Environment Properties

- Accessibility: Partially Observable
- Determinism: Non-deterministic
- Episodicity: Non-episodic
- Dynamics: Dynamic
- Continuity: Continuous

Agent Tools

- Communication Channel:
 - Enables **communication** between crews.
 - Each crew has a **facilitator** agent with access to it.
- Database Management:
 - Grants access to **persistent** data.
 - **Information** agents can read and update databases.
 - Other agents may query to **specialized knowledge** bases.

Agent Crews Overview

Five specialized teams:

- 1 Emergency Services
- 2 Firefighters
- 3 Medical Services
- 4 Forensics Team
- 5 Public Communications

Emergency Services

- Emergency Call Agent
 - Main task: Receive and assess calls
 - Type: Interface agent
- Notification Agent
 - Main task: Relay information
 - Type: Facilitator agent

Firefighters

- Fire Chief
- Equipment Technician
- Fire Combatant

Medical Services

- Medical Services Operator
 - **Facilitator** agent.
 - Capable of **communicating** with other crews.
- Hospital Coordinator
 - **Information** agent
 - In charge of **managing** hospital **resources**.
- Paramedic Teams
 - **Collaborative** agent
 - Deployed in **teams** to aid at the emergency site.

Forensics Team

- Investigates causes and origins of fires
- Collects and analyzes evidence
- Documents findings for future prevention
- Collaborates with other emergency teams

Public Communications

- **Communications Operator:**
 - **Facilitator** agent.
 - Capable of **communicating** with other crews.
- **Archive Keeper:**
 - **Information** agent.
 - **Stores** and **retrieves** incidents.
- **Article Writer:** Drafts and refines public announcements.
- **Mayor:** Approves and aligns communications with city standards.
- **Social Media Commentator:** Engages the public with morale-boosting commentary of the articles.

References

- Wooldridge, Michael. An Introduction to MultiAgent Systems. 2nd ed., John Wiley & Sons, 2009. ISBN 978-0-470-51946-2.
- Wooldridge, Michael. "Properties of Intelligent Autonomous Agents." YouTube, 26 Feb. 2010,
https://www.youtube.com/watch?v=vID-_uIfAvg.