# Computer Science GTA Project

|  |  |
| --- | --- |
| **First Supervisor** | Marco Volpe |
| **School/Department** | CMS |
| **Email**  | mv163@leicester.ac.uk  | **Telephone Ext** |  |

|  |  |
| --- | --- |
| **Second Supervisor** | Fabricio Goes |
| **School/Department** | CMS |
| **Email**  | lfwg1@leicester.ac.uk  | **Telephone Ext** |  |

|  |  |
| --- | --- |
| **Additional Supervisor** |  |

**Section 2 – *Project Information***

|  |  |
| --- | --- |
| **Project Title** | Controlling Narrative Generation: A Logic-Based Framework for Storytelling with LLMs |
| **Project Highlights:** | 1. | Develops a formal system based on modal and temporal logics to model narrative structure |
| 2. | Extends Marie-Laure Ryan’s possible worlds theory into a rigorous, proof-theoretic framework |
| 3. | Enhances story generation in large language models through logic-based narrative control |
| **Project Summary**  |
| This project explores the application of formal logic systems to the generation and analysis of narrative, with a focus on modal and temporal logics. Building on Marie-Laure Ryan’s possible worlds theory, which conceptualizes narrative as a set of accessible worlds defined by characters' knowledge, beliefs, and desires, the study aims to formalize these insights into a rigorous logical framework. The central goal is to define a dedicated logic of narrative capable of modeling essential narrative features such as plot progression, branching events, character agency, and epistemic variability.To this end, the project will involve the formalization of Ryan's theoretical apparatus using tools from modal, temporal, and dynamic logics, and their extension where necessary to accommodate narrative-specific constructs. The resulting system will include a formal semantics and syntax for narrative representation, along with a corresponding deductive system and proof theory. This formal approach enables precise reasoning about narrative structure, coherence, and plausibility.A key applied dimension of this project is its integration with large language models (LLMs) used in automated story generation. By embedding formal narrative logic into the generative pipeline, we aim to enhance the controllability and interpretability of LLM-generated narratives. This could allow for more structured plot development, logically consistent character behavior, and the enforcement of narrative constraints during generation. Ultimately, the project bridges formal logic and computational creativity, proposing a hybrid method where symbolic reasoning augments the generative power of modern neural models. |