Thesis

ConOps/Aircraft Development Process: Deterministic Approach and how AI can support

Background:

The aim of this research is to analyze and compare the Concept of Operations (ConOps) development process and the aircraft development process, with a particular focus on the role of how AI can support this process. The study will compare traditional methodologies, approaches taken by startups, and the challenges faced in the development of Unmanned Aerial Systems (UAS). A key aspect of this research is the comparison between deterministic and possible AI-based approaches, identifying where AI can effectively support or even replace conventional processes. While a literature review will provide the foundation, the primary focus lies in evaluating AI's potential to enhance or transform established development practices.

Task Description (description is only a suggestion—feel free to reach out with similar ideas in this field):

- Traditional Process:
    - Overview of the classical ConOps and aircraft development processes
    - Overview of methods and strategies employed by startups
    - Key stages and methodologies involved
    - Comparison with traditional processes
- Challenges in UAS Development (overview):
    - Specific challenges encountered in the development of Unmanned Aerial Systems
    - Regulatory, technical, and operational challenges
    - Financial, technological, and market-related challenges
- Integration of AI in Traditional Processes
    - Identify potential areas where AI can support or replace traditional processes
    - (optional case studies and examples of successful AI integration)
- Deterministic vs AI Approaches:
    - Comparison between deterministic methods and AI-based approaches in ConOps and aircraft development
    - Advantages and limitations of each approach
- Documentation of results in a thesis , including references and appendices

Required Profile of Qualifications:

- Diligent and structured working methods and high level of commitment
- Basic knowledge in ConOps and aircraft development

Submission Guidelines:

- The thesis should be written in English (however, german is possible) and follow the standard academic format
- Use of credible and up-to-date sources is mandatory
- Start date: Any time