



ΤΜΗΜΑ ΨΗΦΙΑΚΩΝ
ΣΥΣΤΗΜΑΤΩΝ



ΙΝΣΤΙΤΟΥΤΟ ΠΛΗΡΟΦΟΡΙΚΗΣ
ΚΑΙ ΤΗΛΕΠΙΚΟΙΝΩΝΙΩΝ

Προτεινόμενα Θέματα Διπλωματικής Εργασίας

Από

Accenture

- A. **"Comparison and benchmarking of performance, accuracy and completeness between foundational open-source embedding & language models for Greek languages"**

> **Description:** The thesis aims to conduct a comprehensive comparison and benchmarking analysis of foundational open-source embedding and language models tailored for the Greek language. It will aim into evaluating various aspects such as performance, accuracy, and completeness of these models. Through rigorous experimentation and assessment, the study seeks to provide insights into the strengths and weaknesses of different models, shedding light on their suitability for various natural language processing tasks in the Greek language domain. The comparison may involve well-known models such as word embeddings, contextual embeddings, and language models, with a focus on their applicability and effectiveness in capturing semantic and syntactic nuances specific to Greek.

- B. **"Leveraging Artificial Intelligence for Enhanced Industrial Digital Twin Modeling and Analysis"**

> **Description:** Explore the intersection of artificial intelligence (AI) and digital twin technology to advance modeling and analysis capabilities. Digital twins are virtual replicas of physical systems or processes that enable real-time monitoring, simulation, and optimization. This research aims to leverage AI techniques to enhance the accuracy, efficiency, and predictive capabilities of digital twin models. By integrating AI algorithms, machine learning, and data



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analytics, the study will focus on developing intelligent digital twin systems capable of capturing complex behaviors, optimizing performance, and enabling proactive decision-making. The findings will contribute to the growing field of AI-driven digital twins, with potential applications in various domains such as manufacturing, healthcare, infrastructure management, and beyond.

C. “Generative AI to revolutionize Manufacturing Design”

> **Description:** Generative design is a powerful new way to approach engineering design problems, turning such tedious processes into a sophisticated yet natural interaction between computer and engineer. While AI can't replace humans, Generative AI can automate many of the processes that create bottlenecks, ranging from optimization to aesthetics; disrupting the whole engineering and digitization product lifecycle. The goal of this thesis is to enable a GenAI-powered solution that will automatically generate and optimize manufacturing designs (CAD) based on user-defined engineering parameters, such as weight or durability, but also for commercial parameters, like production costs or even aesthetic requirements.