Annex I. Registration of the Degree Final Project (TFG-ADE)

STUDENT NAME: Ainhoa Núñez Espejo

PROGRAM: MII + ADE GROUP: 6th year DATE: 28/05/2025

Assigned Director: González Fabre (Surnames), Raul (Name)

Working title of the TFG-ADE:

Analysis of Artificial Intelligence in Investment Management

ATTACH PROPOSAL (maximum 2 pages: objective, bibliography, methodology and preliminary index)

Student Signature:

Ainhoa Núñez Espejo
Date: 28/05/2025

Proposal of the TFG

1. Contents

Objetives

The principal objective of this project is to develop a structured analytical framework for evaluating the integration and effectiveness of Artificial Intelligence in investment management.

This framework has the dual purpose of applying it to a comparative study of real-world case studies of leading AI-driven funds and platforms while also providing a foundation for future academic or professional analyses in the field. It will have a specific focus on AI's applications in portfolio optimization, trading strategies, risk management, and client advisory models.

Some secondary objectives are:

1. To explore the types of AI technologies most relevant to investment management, such as machine learning, natural language processing, and reinforcement learning.

2. To assess how AI is currently applied across key functions like portfolio optimization, risk assessment, algorithmic trading, and robo-advisory.

3. To conduct a comparative analysis of leading investment firms like BlackRock, Renaissance Technologies, JPMorgan or Wealthfront using AI using the framework.

4. Draw conclusions from the study to evaluate whether AI-based strategies offer measurable advantages over traditional investment approaches in terms of performance, efficiency, and scalability.

5. To identify regulatory, ethical, and transparency challenges linked to AI deployment in finance.

6. To anticipate future developments, including trends in AI, ESG integration, and the broader transformation of the financial sector.

2. Methodology

This project adopts a qualitative and comparative methodology, centred on the design and application of a custom analytical framework. The tailored framework will then be used to assess the integration and effectiveness of Artificial Intelligence in investment management practices. It will be designed by drawing insights from industry reports, academic literature, and market examples to capture the most relevant factors ensuring it is practical and adaptable.

The assessment will be carried out with a comparative study of different cases of investment firms using AI and an evaluation of fund behaviour. The data collected will come from company publications, media reports, and publicly available performance metrics to apply the framework consistently. The goal is to produce a replicable tool for this and future analyses.

3. Structure

The project begins by understanding investment management and funds. This is followed by exploring the core AI technologies currently used in finance, such as machine learning, natural language processing, and reinforcement learning, to understand their potential applications and limitations.

Chapter 4 will explain the evaluation model developed to assess different investment firms based on

how they integrate AI into portfolio. It will also take a deep dive into some cases and their study to later compare them. The criteria will be based on AI techniques used, impact on investment performance, operational efficiency, transparency, and regulatory considerations.

Lastly, chapters 5 and 6 will synthesize the findings and explain the conclusions drawn about the current state of AI in investment management, its benefits and challenges, and potential future trends. These will give a forward-looking perspective on AI adoption trends, sustainable investing, ESG integration, and the challenges that investment firms may face as AI continues to evolve.

4. Bibliography

[1] Brozović, V. (2019). Application of artificial intelligence in the sector of investment funds (Undergraduate thesis). Zagreb: University of Zagreb, Faculty of Economics and Business. Taken from https://urn.nsk.hr/urn:nbn:hr:148:811346

[2] Rasouli, M., Chiruvolu, R., & Risheh, A. (2023, 6 septiembre). AI for Investment: A Platform Disruption. arXiv.org. https://arxiv.org/abs/2311.06251

[3] Miziołek, T. (2021). Employing artificial intelligence in investment management. En *Routledge eBooks* (pp. 161-174). https://doi.org/10.4324/9781003095354-9

[4] Anon. Institutionen, G. U. (2023, 3 julio). *Artificial Intelligence in Fund Management*. https://gupea.ub.gu.se/handle/2077/77602

[5] Kumar, S., Srivastava, M., & Prakash, V. (2023). Challenges and Opportunities for Mutual Fund Investment and the Role of Industry 4.0 to Recommend the Individual for Speculation. En *Springer eBooks* (pp. 69-98). https://doi.org/10.1007/978-3-031-20443-2_4

[6] Mutual Funds Investment Risk Analysis Using Machine Learning. (2024). *IEEE Conference Publication | IEEE Xplore*. https://ieeexplore.ieee.org/document/10545240

[7] Taherdoost, H., & Drazenovic, G. (2024). Impact of Artificial Intelligence on Investment: A Narrative Review. *Algorithms For Intelligent Systems*, 275-286. https://doi.org/10.1007/978-981-99-8438-1_20

[8] Pham, V. (2025). AI-Powered investment banking: Real-world use cases and implementation. *KMS Solutions Asia*. Retrieved from https://kms-solutions.asia/blogs/ai-powered-investment-banking

[9] Anuar, A. A., Sulaiman, A. A. B., & Mohamad, M. T. B. (2025). Comparative analysis of AI-driven versus human-managed equity funds across market trends. *Future Business Journal*, *11*(1). https://doi.org/10.1186/s43093-025-00540-8