HW4#1: Team Name, team members

4.1.1 Team Name : AI Co-Scientist

We chose AI Co-Scientist as our team name, inspired by the paper "The AI Scientist: Towards Fully Automated Open-Ended Scientific Discovery." While the paper presents a fully automated research framework, our approach emphasizes the value of human oversight throughout the research process. Recognizing that AI agents can sometimes make errors or lose focus without guidance, our "co-scientist" model integrates human expertise to ensure more reliable and meaningful outcomes. This hybrid approach leverages the efficiency of AI while maintaining the critical, context-aware insights that only human researchers can provide, making it a more realistic and robust solution for automating research.

4.1.2 Team Members

Chrysis Andreou : andreou.chrysis@ucy.ac.cy

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HW4#2: Team’s Github link

Through the following link, the professor and teaching assistant have access to our public GitHub repository, where they can review each member’s contributions:

https://github.com/ChrysisAndreou/MAI622_AI_Co-Scientist

Since the repository is public, they can view all activity without needing to be explicitly added as collaborators. However, if direct collaborator access is required for assessment purposes, we would appreciate their GitHub usernames so we can grant the necessary permissions. Please let us know if any additional access settings are required.

HW4#3: Team’s Slack channel

The invitation link to the Slack channel expires in 30 days:

https://join.slack.com/t/mai622aico-scientist/shared_invite/zt-30gsnfb0z-c4WDRcx9CTE0HWbSSbTAfA

I have also added the professor, teaching assistant, and all team members to the Slack channel using their university email addresses.

HW4#4: Mission Statement

Our Mission Statement

"Our mission is to accelerate scientific discovery by making AI a trusted co-scientist for researchers."

How We Arrived at This Mission Statement

Step 1: Reflecting on AI Co-Scientist's Core

Purpose & Reason for Being:

AI Co-Scientist aims to enhance scientific research by integrating artificial intelligence with human expertise. The company exists to address the challenges posed by the exponential growth of research data and the need for efficient, reliable research processes, leveraging AI to assist while keeping human oversight to ensure meaningful outcomes.

Target Audience:

We serve researchers, scientists, and organizations engaged in scientific discovery across various fields. These customers face issues like managing vast datasets, conducting literature reviews, generating hypotheses, writing code, and benchmarking progress—tasks that AI can streamline.

Value Addition:

We add value by automating repetitive research tasks, saving time and effort, and allowing researchers to focus on creative, high-level work. Our unique approach combines AI's efficiency with human guidance, ensuring outputs are reliable, context-aware, and impactful.

Step 2: Answering Key Mission Statement Questions

- **What's our purpose?**
  To empower scientific discovery through AI-assisted research guided by human expertise.
- **What's our reason for being?**
  To tackle the overwhelming growth of research data and the demand for faster, more reliable research processes.
- **Why do we exist?**
  To bridge the gap between AI's powerful capabilities and the critical insights only humans can provide in scientific research.
- **Who do we serve?**
  Researchers, scientists, and scientific organizations worldwide.
- **How do we serve our customers?**
  By providing an AI-powered platform that automates research tasks while incorporating human oversight for quality and relevance.
- **What problem(s) do we solve?**
  We address inefficiencies in processing large research datasets, generating novel hypotheses, reviewing literature, and ensuring the trustworthiness of automated outputs.
- **What inspired us to start this business?**
  The potential of AI to revolutionize research—highlighted by works like *"The AI Scientist: Towards Fully Automated Open-Ended Scientific Discovery"*—combined with the recognition that human oversight is essential for practical, trustworthy results.
- **How do we improve our customers' lives, our industry, or society?**
  We accelerate the pace of scientific discovery, reduce researcher workload, and ensure high-quality, relevant outcomes that advance human knowledge.

Step 3: Synthesizing Reflections

The mission statement needed to capture:

- Accelerating scientific discovery
- AI-human collaboration as a "co-scientist"
- Researchers as the target audience
- Core values: efficiency, reliability, trust, and impact

After exploring various drafts, we settled on:
"Our mission is to accelerate scientific discovery by making AI a trusted co-

scientist for researchers."

This version is:

- **Concise** – Clear and to the point
- **Personal** – "Our" conveys collective commitment
- **Motivating** – Inspires trust and progress
- **Value-driven** – Highlights collaboration, trust, efficiency, and impact

HW4#5: Discussion about the Details

1. Finalize your teams and team name

Answered elsewhere.

2. Discuss the common vision for your project

The common vision for our project is to revolutionize scientific research by seamlessly integrating AI as a trusted co-scientist, accelerating discovery while ensuring efficiency, reliability, and human oversight.

3. Discuss how you are going to work together

We will collaborate through regular meetings, clear task delegation, open communication via Slack and GitHub, and an **organized** decision-making process to ensure efficiency and accountability.

4. Discuss goals for the course

Course Goals:

- Develop a deep understanding of innovation-driven entrepreneurship with a focus on AI and Data Science.
- Learn and apply proven methodologies (e.g., Disciplined Entrepreneurship, Lean Startup, Business Model Canvas) to real-world scenarios.
- Build practical skills in business planning, market analysis, product design, team formation, and pitching to investors.
- Integrate theoretical knowledge with hands-on experiences through lectures, case studies, and guest seminars.

Group Project Goals:

- Create and refine an AI-based entrepreneurial idea with strong commercial or social potential.
- Apply the 24-step Disciplined Entrepreneurship process to develop a comprehensive business and technology plan.
- Produce key deliverables including a business model canvas, financial analysis, prototype, and final venture capital pitch.
- Foster collaborative teamwork and iterative feedback to simulate real-world startup challenges.

5. Specify the real problem you are trying to solve

Ask many “why?” questions until you are all comfortable that you have reached the root problem.

The Real Problem We Are Trying to Solve

Breaking Down the Problem Using "Why" Analysis:

1. **Why is scientific research inefficient?**
   - Researchers spend excessive time on repetitive tasks like literature reviews, data processing, and hypothesis testing.
2. **Why do these tasks consume so much time?**
   - The volume of published research is overwhelming, making it difficult to filter relevant information efficiently.
   - Data analysis often requires extensive manual effort and domain expertise.
3. **Why is AI not already solving this?**
   - Current AI tools lack context awareness and struggle with reasoning beyond predefined rules.
   - AI-generated insights often require validation due to potential errors, bias, or misinterpretation of research findings.
4. **Why does this matter?**
   - Slower scientific progress delays critical discoveries in medicine, technology, and other fields.
   - Researchers face burnout and inefficiencies that hinder innovation.

Root Problem Statement:

Scientific research is increasingly slowed down by data overload, repetitive manual tasks, and the limitations of existing AI tools, preventing researchers from

focusing on high-level scientific reasoning and breakthrough discoveries.

Our Solution:

AI Co-Scientist aims to **bridge the gap** between AI automation and human expertise by creating a **trusted AI assistant** that accelerates research while ensuring quality, relevance, and reliability.

6. Prepare a mission statement for your company

Answered elsewhere.

7. Discuss how you will make decisions and when you will meet based on past experiences and group projects

7.1. What did you learn from past group projects?

- Clear communication and task delegation are key to efficiency.

7.2. Pitfalls to avoid.

- Lack of accountability, unclear roles, and poor time management.

7.3. Good ideas to embrace.

- Frequent check-ins, constructive feedback, and shared documentation.

7.4. What is the best way(s) for your team to connect?

- Slack for daily communication, GitHub for collaboration.

7.5. How will you integrate and learn from each other?

- Knowledge-sharing sessions and rotating task ownership.

7.6. What will be the process when you disagree?

- Discuss openly, prioritize data-driven decisions, and vote if needed.

7.7. What will be the role (at least to start) for each member on the team?

- Chrysis: AI development & technical lead
- Mariam: Market research & business strategy
- Mohamad: Software development & data analysis
- Michalis: Documentation & project management

7.8. What drew you to this team?

- A shared passion for AI and its impact on scientific research.

7.9. What should be the raison d’être for your startup?

(i.e., why is the world going to be a better place because this organization exists?)

- To accelerate scientific breakthroughs by making AI a reliable research assistant.

8. Discuss what assets you have that you feel:

8.1. What gives you credibility to address this problem?

Our team holds advanced degrees in computer science and has extensive expertise in AI development, scientific research, and data analysis, ensuring both technical proficiency and deep domain knowledge.

8.2. What gives you a unique advantage to solve this problem?

In addition to our strong academic background, we are well-equipped with high-performance laptops and other essential technical resources. This enables us to efficiently develop and test our AI solutions, while our hybrid approach—balancing AI automation with human oversight—ensures both efficiency and reliability in research.

9. What are the values that you want this organization to uphold, hold sacrosanct and represent? (i.e., you will not compromise them).

Our organization is committed to democratizing AI research and ensuring the safe development of open-source AGI that benefits all humanity. We uphold integrity, collaboration, innovation, and transparency as core values to guide our mission.

10. Brainstorm some potential paths for solutions but don’t get attached!

10.1. How are we going to really learn this space and test our assumptions? Which are your sources of information? (Secondary market research – don’t do too much, the Primary Market Research is more important, but you need a balance)

We will conduct a mix of primary and secondary research by analyzing existing AI research tools, reviewing academic literature, and engaging with researchers to validate pain points.

10.2. Where can you go and what can you do to learn more? (Observation and Immersion)

We will attend academic conferences, AI research workshops, and online forums while also testing existing AI research tools to identify their limitations.

10.3. Who should you talk to so to learn more? (Interviews)

We will interview AI researchers, data scientists, academic professionals, and industry experts who use AI in their research workflows to gain first-hand insights.

11. Prepare a mission statement for your company (check course’s resources on what a mission statement is and how it should be drafted, size etc)

Answered elsewhere.