Overview of AI Project Ideation

What is ideation?

Ideation refers to the process of generating, developing and communicating new ideas. It involves thinking creatively to conceive novel concepts, approaches, solutions or designs.

Why is it important?

Ideation helps organizations innovate, solve problems and capture future opportunities. It spurs thinking "outside the box" to come up with disruptive or paradigm-shifting ideas.

New ideas can lead to new products/services, business models, process improvements or strategic redirections that drive growth.

Regular ideation keeps the organizational culture and mindset innovative and future-focused. It also breeds employee engagement and motivation.

I. Ideation techniques

There are many ideation techniques, here are some commonly used ideation techniques:

1. **Brainstorming**: Gather a group of individuals and encourage them to generate as many ideas as possible without judgment or evaluation. The goal is to promote a free-flowing and open environment where participants can build upon each other's ideas and inspire new ones.
2. **Mind Mapping**: Start with a central idea or problem statement and create a visual map of related concepts, ideas, and associations. This technique helps generate a network of interconnected thoughts and can spark new ideas by exploring different branches and connections.
3. **SCAMPER**: SCAMPER is an acronym that stands for Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, and Reverse. This technique prompts you to think about each element of your project or problem and consider ways to modify or manipulate it to generate new ideas.
4. Role-Playing: Assume different perspectives or personas related to the problem or project. By adopting different roles, you can explore ideas and solutions from various viewpoints, which can lead to fresh insights and innovative approaches.
5. **Random Word/Phrase**: Select a random word or phrase, either from a list or by using a random word generator, and challenge yourself to connect it to your project or problem. This technique encourages lateral thinking and can stimulate unexpected and creative ideas.
6. **Analogies and Metaphors**: Draw parallels between your project or problem and unrelated domains or concepts. By identifying similarities and transferring ideas from one context to another, you can generate fresh perspectives and innovative solutions.
7. **Reverse Thinking:** Instead of solving a problem directly, approach it from the opposite perspective. Ask yourself how you can achieve the opposite outcome or create obstacles, and then brainstorm ideas to overcome those obstacles. This technique can help break conventional thinking patterns and stimulate innovation.
8. **Six Thinking Hats:** this technique involves assigning different "hats" to participants, with each hat representing a different mode of thinking. By systematically switching between these hats, individuals can explore a problem or topic from multiple perspectives. Here are the six hats and their corresponding thinking modes:

Remember that ideation is a divergent thinking process, where the goal is to generate a large quantity of ideas without judgment. After ideation, you can proceed to evaluate, select, and refine the most promising ideas through further analysis and validation.

II. Brainstorming

Brainstorming is a widely used technique for generating a large number of ideas in a short amount of time. It is a collaborative and free-flowing process that encourages participants to think creatively and contribute their thoughts without judgment. Here's how you can effectively conduct a brainstorming session:

- **Define the objective:** Clearly articulate the problem, challenge, or goal for the brainstorming session. Make sure all participants understand what is being addressed and what you aim to achieve.
- **Choose the right participants:** Select a diverse group of individuals who bring different perspectives, knowledge, and expertise related to the topic. This diversity can foster more varied and innovative ideas.
- **Set the rules:** Establish a safe and non-judgmental environment where all ideas are welcomed. Encourage participants to suspend criticism and evaluation during the brainstorming process. Emphasize that quantity is important at this stage, and all ideas, no matter how wild or unconventional, are valuable.
- **Provide stimuli:** Introduce prompts, questions, or visual aids to stimulate thinking and spark ideas. These stimuli can help participants generate new connections and insights.
- **Generate ideas:** Allow participants to freely share their ideas, one at a time. Encourage them to build upon each other's ideas and to think beyond conventional boundaries. Remind them to focus on quantity and not worry about the quality or feasibility of the ideas during this stage.
- **Encourage active participation:** Ensure that all participants have an equal opportunity to contribute and be heard. Facilitate an inclusive and engaging discussion, prompting quieter participants to share their thoughts and preventing dominant voices from overshadowing others.
- **Record ideas:** Document all the ideas shared during the brainstorming session. This can be done on a whiteboard, flip chart, or using digital collaboration tools. Make sure that all ideas are captured accurately and visible to all participants.
- **Cluster and categorize:** Once the brainstorming session is complete, group similar ideas together and identify common themes or patterns. This clustering process can help organize and make sense of the generated ideas.
- **Evaluate and refine:** After the brainstorming session, review and evaluate the generated ideas. Determine which ideas are most promising, feasible, and aligned with the defined objective. Explore ways to refine, combine, or build upon the selected ideas.

Figure 1. Brainstorming session

Remember, the primary goal of brainstorming is to generate a large quantity of ideas. Later stages of the design process can involve evaluating, refining, and selecting the most promising ideas for further development.

III. Mindmap

A mind map is a visual representation of ideas, concepts, and relationships organized around a central theme or topic. It is a powerful tool for brainstorming, organizing thoughts, and making connections between different elements. Here's how you can create a mind map:

1. Start with a central idea: Begin by identifying the main topic or concept that you want to explore. Write it down in the center of a blank page or a digital canvas. This central idea will serve as the focal point of your mind map.

2. Branch out with main categories: From the central idea, create branches that radiate outward. Each branch represents a main category or subtopic related to the central idea. Write down these categories as keywords or short phrases on separate branches.

3. Add sub-branches and details: For each main category, create sub-branches that further expand upon the topic. These sub-branches can represent specific aspects, ideas, or details related to the main category. Connect them to the respective main branches.

4. Use colors, symbols, and images: Enhance your mind map by using colors, symbols, and images. Assign different colors to branches or categories to visually distinguish them. Incorporate symbols or icons to represent concepts or ideas. Include relevant images to stimulate visual thinking and aid in memory retention.

5. Make connections: Look for relationships and connections between different branches and categories. Use lines or arrows to link related ideas or show cause-and-effect relationships. This helps visualize the associations and dependencies between different elements in your mind map.

6. Keep it concise and visual: Use keywords, short phrases, or visual cues rather than lengthy sentences or paragraphs. The goal is to capture the essence of ideas in a concise and visually engaging manner. This makes the mind map easier to understand and navigate.

7. Iterate and refine: Mind mapping is an iterative process. As you explore more ideas or gain new insights, continue to expand and refine your mind map. Add new branches, rearrange existing ones, and make adjustments to reflect the evolving understanding of the topic.

8. Customize to your preference: There are various digital tools available for creating mind maps, such as online platforms or dedicated software. Alternatively, you can also create a mind map using pen and paper. Choose the method that suits your preference and allows for easy modification and sharing.

Mind maps are versatile and can be used in various contexts, including brainstorming sessions, note-taking, project planning, problem-solving, and organizing complex information. They enable you to visualize the relationships between ideas and foster creative thinking by encouraging non-linear associations.

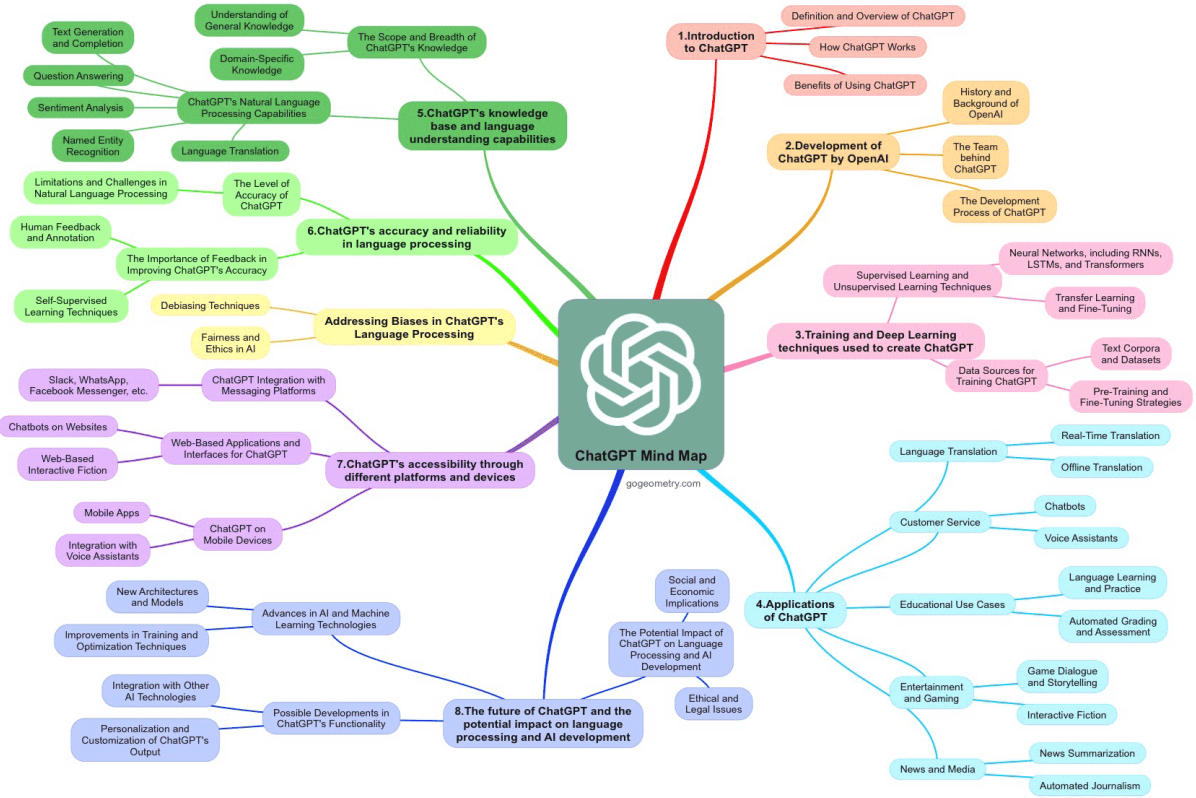

Figure 2. chatgpt mindmap

IV. SCAMPER:

SCAMPER is a creative thinking technique that can help you generate new ideas and innovative solutions by exploring different ways to modify or manipulate existing concepts. Each letter of the word "SCAMPER" represents a particular type of transformation that you can apply to a product, process, or idea. Here's a breakdown of each component:

S - Substitute: Consider substituting or replacing a particular element, component, or attribute with something else. Ask yourself questions like: What can I substitute to improve this? Can I replace a material, method, or feature with another?

C - Combine: Explore possibilities by combining or integrating different elements, features, or ideas together. Think about how you can merge or blend things to create something new and unique. Ask questions like: What can I combine to create a more effective solution? How can I merge different concepts or functionalities?

A - Adapt: Look for ways to adapt or modify existing ideas, processes, or approaches to suit a different context or purpose. Ask yourself: How can I adapt this to solve a different problem or cater to a different audience? What changes can be made to improve the adaptability or versatility of a solution?

M - Modify: Consider making modifications or alterations to various aspects of your idea. This could include changing the shape, size, color, timing, or any other characteristic. Ask questions like: How can I modify this to make it more efficient or user-friendly? What changes can I make to enhance performance or aesthetics?

P - Put to another use: Explore alternative applications or contexts where your idea, product, or concept can be used. Consider how it could be repurposed or utilized in a different way. Ask questions like: Can I put this to another use? How can I leverage this idea in a different industry or setting?

E - Eliminate: Identify elements, steps, or features that can be eliminated or removed without compromising the core functionality or purpose. Ask yourself: What can I eliminate to simplify or streamline the process? Are there any unnecessary components or steps that can be removed?

R - Reverse/Reorder: Consider reversing or rearranging the order of steps, processes, or elements to explore new perspectives or possibilities. Ask questions like: What if I reverse the order of operations? How can I approach this problem from a different angle?

By applying these different transformation techniques, you can stimulate creative thinking, challenge assumptions, and generate innovative ideas. SCAMPER is a flexible tool that can be used across various domains and disciplines to foster innovation and problem-solving.

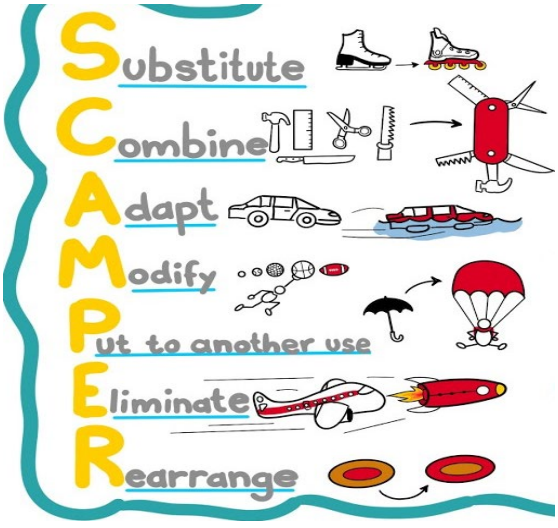

Figure 3. Examples of using SCAMPER

V. Six Thinking Hats:

The Six Thinking Hats is a technique developed by Edward de Bono that helps individuals and groups approach problem-solving, decision-making, and critical thinking from different perspectives. Each "hat" represents a specific mode of thinking. Here's an overview of the six hats:

1. **White Hat:** The White Hat represents a focus on facts, data, and information. When wearing the White Hat, participants gather and analyze objective information about the topic at hand. They examine what is known, identify any knowledge gaps, and seek additional data or research.

2. **Red Hat:** The Red Hat represents emotions, intuition, and gut feelings. When wearing the Red Hat, participants can express their emotions, intuitions, and subjective reactions without the need for explanation or justification. It encourages participants to tap into their instincts and emotional responses.

3. **Black Hat:** The Black Hat signifies critical thinking and cautious judgment. When wearing the Black Hat, participants identify potential problems, risks, and weaknesses associated with an idea or proposal. They evaluate the potential negative aspects and offer critical analysis.

4. **Yellow Hat:** The Yellow Hat represents optimism, positivity, and benefits. When wearing the Yellow Hat, participants focus on the positive aspects, benefits, and value of an idea or proposal. They explore the potential advantages, possibilities, and strengths.

5. **Green Hat:** The Green Hat symbolizes creativity and innovation. When wearing the Green Hat, participants engage in creative thinking, brainstorming, and generating new ideas. They explore alternative approaches, seek novel solutions, and encourage fresh perspectives.

6. **Blue Hat:** The Blue Hat represents process control and facilitation. It is typically worn by the person leading the discussion or meeting. The Blue Hat sets the agenda, manages the overall thinking process, and ensures that each hat is used effectively. It also guides the transition between the different thinking modes.

The Six Thinking Hats technique allows individuals or groups to systematically explore a problem or topic from multiple perspectives. By wearing different hats, participants can shift their thinking mode and consider various aspects, ensuring a more comprehensive and balanced approach to decision-making and problem-solving. The technique encourages parallel thinking and provides a structured framework for collaborative thinking and analysis.

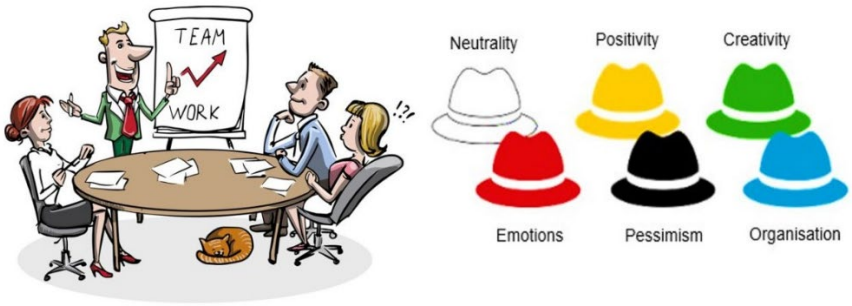

Figure 4. Six hats techniques

Example:

An example of how the Six Thinking Hats technique can be applied to an AI project:

Scenario: A team is working on developing an AI-based recommendation system for an e-commerce platform.

- **White Hat:** The team wearing the White Hat gathers and analyzes factual information about the project. They examine data on user behavior, product catalog, and existing recommendation algorithms. They also assess technical requirements, data availability, and any legal or ethical considerations related to user privacy and data protection.
- **Red Hat:** The team wearing the Red Hat expresses their emotions and intuitions about the AI project. They share their excitement, concerns, and personal experiences related to recommendation systems. This helps identify potential biases or subjective perspectives that might influence the design and implementation.
- **Black Hat:** The team wearing the Black Hat critically evaluates potential problems and risks associated with the recommendation system. They identify potential challenges such as data quality issues, algorithmic biases, or user resistance to personalized recommendations. This critical analysis helps the team proactively address and mitigate risks.
- **Yellow Hat:** The team wearing the Yellow Hat focuses on the positive aspects and benefits of the AI recommendation system. They explore how it can enhance the user experience, increase customer satisfaction, and drive sales. They also consider potential business opportunities, such as cross-selling or upselling, that can be facilitated by the recommendation system.
- **Green Hat:** The team wearing the Green Hat engages in creative thinking and generates innovative ideas for the recommendation system. They brainstorm different algorithms, data sources, or user interface designs that can improve the accuracy and relevance of recommendations. They can also explore integrating emerging technologies like natural language processing or computer vision to enhance the system's capabilities.
- **Blue Hat:** The project manager or facilitator, wearing the Blue Hat, manages the overall process. They guide the discussion, ensure that each hat is utilized effectively,

and facilitate transitions between the different modes of thinking. The facilitator can summarize key points, steer the team towards actionable decisions, and keep the project on track.

VI. How to choose the best ideation technique ?

Choosing the best ideation technique depends on various factors, including the nature of the problem or challenge you are addressing, the goals of the project, the characteristics of the team, and the available resources. Different ideation techniques serve different purposes and may be more suitable for specific situations. Here are some considerations to help you choose the best ideation technique:

1. **Understand the Problem:**

Begin by thoroughly understanding the problem or challenge you are trying to solve. Different problems may require different approaches to ideation. For example, a complex technical problem may benefit from a structured brainstorming session, while a user experience challenge may involve user-centered design thinking.

2. **Consider the Team Dynamics:**

Take into account the dynamics and preferences of your team. Some teams may excel in a structured and formal environment, while others may thrive in more casual and spontaneous settings. Choose ideation techniques that align with the team's working style.

3. **Diversity of Participants:**

Consider the diversity of participants in your ideation session. If your team includes members from various backgrounds and expertise, techniques like the Six Thinking Hats or the SCAMPER method may encourage different perspectives and creative contributions.

4. **Time Constraints:**

Evaluate the time available for ideation. Some techniques, like rapid prototyping or lightning decision jams, are well-suited for quick, time-boxed sessions. Others, such as design sprints or comprehensive design thinking workshops, may require more time.

5. **Problem Complexity:**

The complexity of the problem at hand can influence your choice of ideation technique. For complex problems, methods like design thinking, where you go through multiple stages of problem framing, ideation, and prototyping, may be more suitable. For simpler problems, quick brainstorming sessions may suffice.

6. **User-Centricity:**

If your project involves designing for end-users, consider user-centric ideation techniques like empathy mapping, user persona creation, or journey mapping. These techniques help ensure that solutions are aligned with user needs and preferences.

7. **Creativity Level:**

Assess the desired level of creativity for your project. If you're looking for breakthrough and innovative ideas, consider techniques like biomimicry or SCAMPER. For more incremental improvements, brainstorming or mind mapping may be appropriate.

8. **Combination of Techniques:**

It's often effective to use a combination of ideation techniques rather than relying on a single method. Start with divergent techniques to generate a broad range of ideas and then use convergent techniques to refine and prioritize those ideas.

9. **Risk Tolerance:**

Consider the level of risk tolerance for your project. Some ideation techniques, like "crazy eights" or "moonshot thinking," encourage thinking outside the box and may lead to more unconventional ideas but come with higher risk.

10. **Previous Successes:**

Reflect on the success of ideation techniques used in previous projects. If certain methods have proven effective for your team in the past, consider incorporating them into your current ideation process.

11. **Resource Availability:**

Assess the availability of resources, including tools and materials needed for specific ideation techniques. Some techniques may require specialized software, physical materials, or facilitation skills.

Ressources

- Michalko, M. (2006). *Thinkertoys: A handbook of creative-thinking techniques*. Ten Speed Press.
- https://www.interaction-design.org/
- https://www.youtube.com/watch?v=pmjyZPibH14