IIT Madras
BS Degree

Strategies For Professional Growth

PROJECT PROPOSAL

ENGINEERING MANAGEMENT :

"Transforming the Engineering Space: The Impact of Generative AI (gen AI) and Deep Learning(DL) on Team Dynamics, Work Ethics, Conflict Resolution and Business Decisions."

Prepared by :

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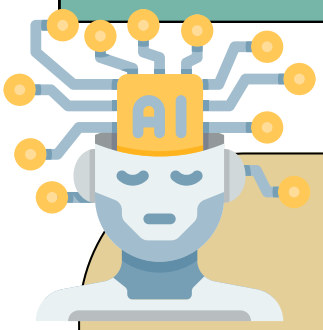
Choosing the team leader: Sayan Hrik

Sayan Hrik (21f3002833) has been chosen as the team leader based on mutual consent of the team members agreeing to him being the ideal candidate for the role. He has always shown high enthusiasm to the project which was elemental to forming our team and deciding our topic.
His great communication and organizational skills make him a good fit for the role. He is always approachable and listens to every opinion with interest and dedication. He has also shown a strong sense of responsibility and passion towards making the project a groundbreaking success.



Why We Choose This Topic?

Transforming Engineering Landscape : The engineering industry is undergoing a profound transformation due to generative AI and deep learning. A McKinsey report suggests that AI technologies could automate up to 45% of work activities across all sectors by 2030, with engineering being particularly affected.

Rapid AI Adoption : The rapid adoption of AI tools in engineering is evident, with 63% of companies reporting increased AI investment in 2023 according to the Deloitte Global State of AI Survey. This trend necessitates a thorough examination of AI's effects on team dynamics, ethics, and decision-making processes.

Shifting Job Market : The World Economic Forum predicts that by 2025, 85 million jobs may be displaced by AI, while 97 million new roles may emerge. This shift underscores the urgency of understanding how AI integration affects professional skills and conflict resolution in engineering teams.

Economic Impact : With AI projected to contribute $15.7 trillion to the global economy by 2030 (PwC), it's crucial to analyze its influence on business strategies and operational decisions in the engineering sector.

Navigating the Future : By exploring this topic, we aim to provide insights that will help engineering managers navigate the AI-driven transformation of their field, ensuring ethical practices, enhanced team dynamics, and informed decision-making in this rapidly evolving landscape.

Project Objectives

- **Analyze the Integration of gen AI in transforming traditional Engineering**
- **Investigate on Changes in Team Dynamics - how gen AI tools affect communication, hierarchy, and productivity within engineering teams**
- **Evaluate Ethical Implications -To guide responsible practice in the ethical implications of AI in engineering .**
- **Impact on Professional Skills and Conflict Resolution - Identify necessary professional development paths and Develop skills in identifying, managing, and resolving conflicts for engineers to stay relevant in an AI-integrated job market.**
- **Business Decision-Making and Strategic Acumen - To analyze how AI can influence business strategies and operational decisions.**

Project Goals

Performance goals:

We aim to create a detailed survey with at least 10 - 15 well-thought-out questions to gather insights from engineering professionals about the impact of Gen AI on team dynamics, work ethics, conflict resolutions, and business decisions. Additionally, we will conduct and document interviews with at least five professionals to gain in-depth qualitative insights. To support our findings, we will review and summarize at least six relevant research papers. Our goal is to provide a comprehensive analysis of these technologies' impacts and develop at least five practical recommendations. We will ensure the report is completed, reviewed, and submitted on time, maintaining high standards of quality and accuracy.

Learning Goals:

Our team will develop the ability to create effective survey questions and analyze survey data to understand the impact of Gen AI .We will improve our interviewing skills, including formulating questions, active listening, and note-taking, and learn to analyze and integrate qualitative data from interviews into our report. Enhancing our skills in critically reviewing and synthesizing information from academic and industry research papers will also be a priority. By combining these findings with our primary data, we aim to provide a well-rounded analysis. Ultimately, we seek to gain a deep understanding of how Generative AI and Deep Learning influence team dynamics, work ethics, conflict resolutions, and business decisions.

People goals:

We will promote effective teamwork by encouraging open communication, regular updates, and shared responsibilities among all five team members throughout the project. We have conduct personality tests for all team members and create a report to better understand each other's personalities, enhancing our teamwork and communication. Engaging professionally and respectfully with survey respondents and interviewees will be crucial to gather valuable insights. We will address any team conflicts promptly and constructively, using conflict resolution techniques to maintain a positive team dynamic. By fostering a collaborative environment and leveraging everyone's strengths, we aim to ensure smooth and efficient project progress with all members contributing effectively.

Primary Resources

PROFESSIONAL NAME	DESIGNATION	COMPANY NAME	YEARS OF EXPERIENCE	PROFILE	INTERVIEWED BY
AYAN PAL	GIC Learning Consultant	IBM (Consulting)	18 Years	Linkedin	Sayan Hrik
VENU GANAPURAM	Senior Principal Scientist	CSIR - NAL, GOI	19.5 Years	Linkedin	Avijeet Palit
GURUDEV MURUGAN	Data Scientist	ICCW (NPO)	2 Years	Linkedin	Uroosha Rahat
LOVLEEN CHADHA	Founder & CTO	qapp.ai	26 Years	Linkedin	Shubham Sharma
ASHIYAN NARANG	Jr. Data Scientist	Bancapp Automation	1 Years	Linkedin	Sourav Sharma
VARDHMAN JAIN	Software Engineer	Wells Fargo	2 Years	Linkedin	Aryan Tiwari

Secondary Resources and Survey Form

Research Papers & Journals

- (PDF) Globalism, Corporate Compliance, and AI Ethics: A Comprehensive Exploration of International Business Challenges and the Role of Generative AI
- Enhancing Work Productivity through Generative Artificial Intelligence: A Comprehensive Literature Review
- Transformative or disruptive? : exploring the impact of generative AI on leadership | ZHAW digitalcollection
- Team Dynamics And Conflict Resolution: Integrating Gen AI in Project Based Learning to Support Students' Performance | Request PDF
- AI transformation and culture shifts | Deloitte US
- Generative AI in Software Engineering: Transforming Productivity

Survey : G-from

https://forms.gle/oQWrK5RsHkKtQTty6

Articles & News

- Unlocking The Future: How Generative AI Is Revolutionizing Software Engineering
- How AI Features Can Change Team Dynamics
- Reimagining software engineering with GenAI
- AI in Workplace Collaboration and Team Dynamics
- Google Responsible AI Practices
- Ethics of Artificial Intelligence | UNESCO
- AI in Employee Relations and Conflict Resolution
- AI in Decision Making: Transforming Business Strategies
- The Impact of AI on Cognitive and Emotional Intelligence in the Workplace

Documentaries & YT Videos

- The Future of Software Engineering and Acquisition with Generative AI
- The Impact of Generative AI on Workforce Productivity
- AI Ethics in Engineering
- How Will Artificial Intelligence Impact High-Skilled Work?
- 🔥 Program Overview: AI For Decision Making: Business Strategies & Applications | Simplilearn
- AI's Impacts on Data Driven Business Decisions | EP:6

Books

- Human + Machine: Reimagining Work in the Age of AI" by Paul R. Daugherty and H. James Wilson
- AI Superpowers: China, Silicon Valley, and the New World Order" by Kai-Fu Lee

Movies

- Ex Machina(2014)
- The Matrix (1999)
- Transcendence(2014)
- Minority Report(2002)
- Blade Runner 2049 (2017)

Rationale for Our Survey

Assessing Demographics and Baseline Knowledge

Questions on demographic information, job title, years of experience, and industry sector help to segment the respondents. This segmentation allows for the analysis of trends and impacts across different groups using descriptive statistics and cross-tabulation. Understanding the level of familiarity with AI technologies sets a baseline for interpreting responses about the impact and challenges of AI integration.

Evaluating AI Adoption and Task Impact

Questions about the current use of generative AI or deep learning tools and their impact on engineering tasks provide insights into the extent of AI adoption. By analyzing these responses, we can employ frequency distribution to determine how widespread AI tool usage is and use impact assessment to identify specific task areas influenced by these technologies.

Investigating Team Dynamics and Communication

Questions on how AI tools have affected communication and team productivity allow for the examination of changes in team dynamics. Using correlation analysis, we can explore the relationship between AI tool usage and team performance metrics. This helps identify patterns and potential areas for improvement in team collaboration.

Ethical Concerns and Skill Requirements

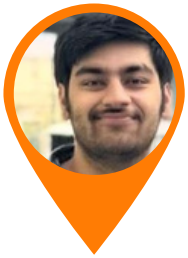
Addressing ethical implications and necessary skills for an AI-integrated job market highlights the broader impact of AI on professional development and moral considerations. Sentiment analysis can be applied to open-ended responses about ethical concerns to gauge overall sentiment. Skill gap analysis helps identify the new competencies engineers require to thrive in an AI-driven environment.

Conflict Resolution and Business Decision Impact

Questions about conflict resolution, training on managing AI-related conflicts, and the influence of AI on business strategies and decision-making provide a comprehensive view of organizational changes. Thematic analysis of open-ended responses can uncover recurring themes and challenges. Decision impact analysis helps evaluate whether AI integration has led to improved decision-making processes or if there are notable drawbacks.

Work Breakdown Structure

Project Management Tool : Jira



UROOSHA RAHAT

She will work in identifying resources and analyzing the secondary data and compiling results for the project. She will also help in conducting interviews and design of report templates.

SHUBHAM SHARMA

He will primarily work on conducting the market survey and creating the google form to collect primary data. He will also help in interviews and analyze the collected data using various tools.

ARYAN TIWARI

He will primarily work in collecting and analyzing secondary data. This will include studying research papers , movies and youtube videos to scrape information for the project.

SAYAN HRIK

As the team leader he will look into the overall success and completion of the project. He will schedule team meetings , conduct industry interviews and form the team contract. He will also allocate tasks to the other members and also help in data analysis and inference.

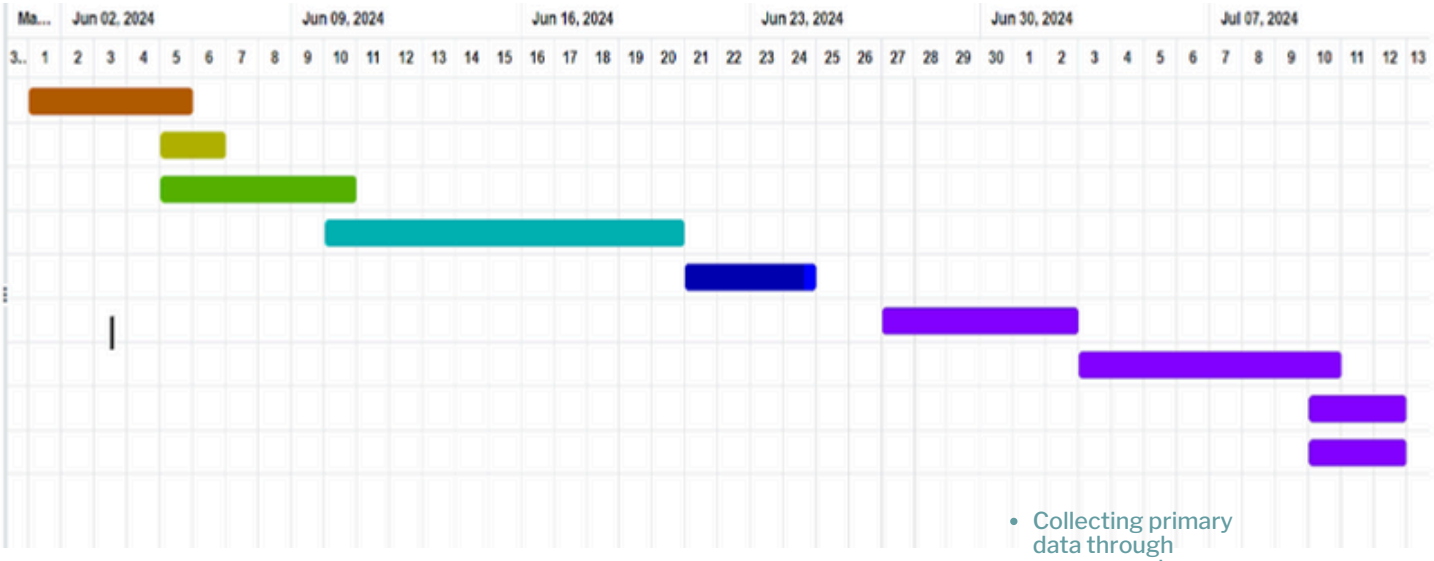
AVIJEET PALIT

He will look into designing and compiling the final reports of the project. He will also conduct industry interviews and help in creating dashboards and inferring results from the analysis.

SOURAV SHARMA

He will also work in primary data collection and analysis. He will be conducting interviews and edit / organize the interview videos as well. He will also help reach out to industry professionals for interviews.

Gantt Chart



- Collecting primary data through surveys and interviews
- collecting secondary data through research papers,movies and videos

Exercise 1 and Team Personality Report

Q1 - Do certain personality traits make people good team members?

Yes, certain traits enhance team dynamics:

- **Effective Communication and Collaboration:** Individuals like Uroosha Rahat (ENFJ-T), who are naturally extraverted, significantly contribute to team dynamics through their strong communication skills, making them excellent mediators and facilitators in group settings.
- **Dependability and Structured Approach:** Members with high Judging percentages such as Sayan Hrik (80% Judging, INFJ-A) provide a dependable structure and systematic approach to managing projects, ensuring tasks are completed in an orderly manner, which is vital for meeting project deadlines.
- **Adaptability to Change**: Team members like Avijeet Palit (INFJ-T) and Aryan Tiwari (INFP-T) score high on Intuitiveness, indicating flexibility and openness to new ideas—qualities crucial for adapting to the rapidly evolving tech landscape of AI and engineering.
- **Empathetic Understanding**: High Feeling percentages in individuals like Avijeet Palit and Uroosha(85% Feeling) mean that these team members are attuned to the emotions and well-being of their colleagues, fostering a supportive and inclusive team environment, which is essential for long-term team cohesion and morale.
- **Problem-Solving and Innovation**: The presence of Intuitive thinkers such as Avijeet and Aryan Tiwari enhances a team's capability to engage in abstract thinking and innovation, enabling the team to develop creative solutions to complex problems.

Q2 - Is it more effective for teams to be composed of members who have different personality types or similar personality types?

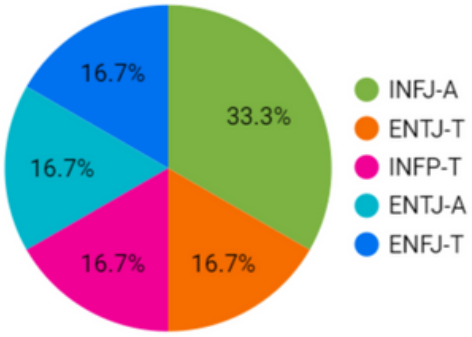
Diversity in Personality Types is Generally More Effective:

- **Diversity in Skills and Perspectives**: Teams composed of a mix of personality types, such as the combination of thinkers like Shubham Sharma (ENTJ-A) and feelers like Avijeet Palit (INFJ-T), bring varied perspectives and approaches to problem-solving, which enhances creativity and results in more innovative solutions.
- **Balanced Decision-Making**: A mix of assertive leaders like Sourabh Sharma (ENTJ-T) and more reserved, introspective types like Sayan Hrik (INFJ-A) ensures a balance between decisive action and thoughtful consideration, which can lead to more thorough and well-considered outcomes.
- **Enhanced Team Resilience**: The diversity in personality types aids in building resilience within the team as different members bring different strengths to handle various challenges, ensuring the team can adapt to and recover from setbacks more effectively.
- **Conflict Resolution**: A variety of personality types can also mean a broader range of conflict resolution strategies. Empathetic and intuitive types like Uroosha Rahat can mediate disputes effectively, while assertive types can ensure that conflicts reach a decisive resolution, maintaining team efficiency.
- **Comprehensive Problem Solving**: Teams that incorporate both Judging types, who prefer structured approaches, and Prospecting types, who are more adaptable, such as Aryan Tiwari (INFP-T), are better equipped to tackle problems from multiple angles, making the team more dynamic and versatile in its problem-solving capability.

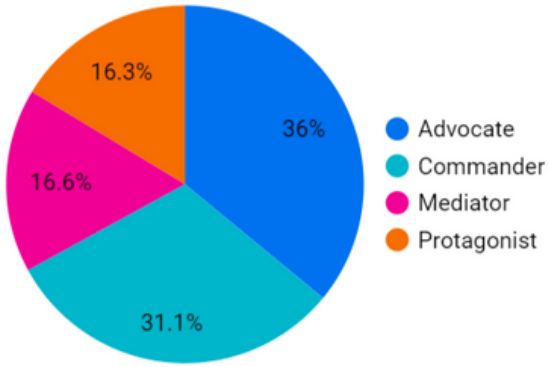
In conclusion, certain personality traits do enhance team effectiveness, particularly in roles that require coordination, empathy, and innovation. Moreover, teams with diverse personality types are generally more effective, as they combine the strengths of various traits to enhance decision-making, creativity, resilience, and conflict resolution.

TEAM PERSONALITY REPORT

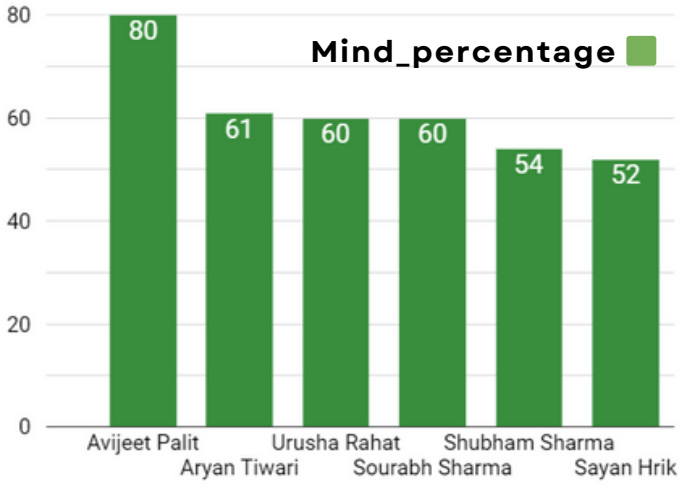
MBTI-TYPE



PERSONALITY OVERVIEW

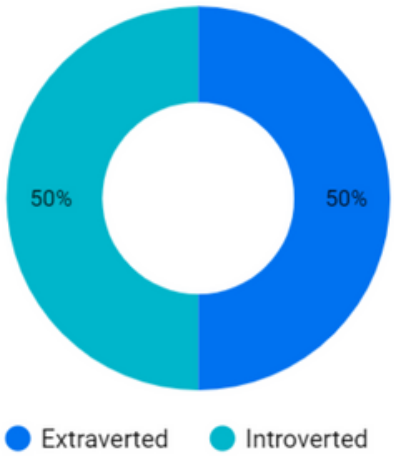


MIND



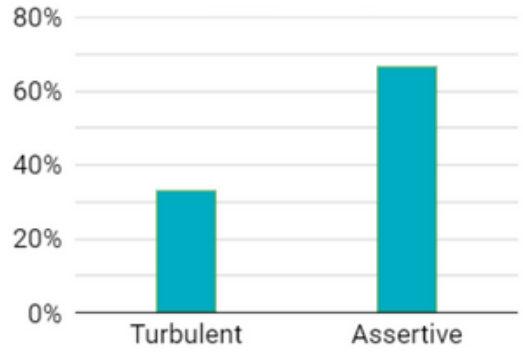
100% INTUITIVE

ENERGY



TACTICS

IDENTITY



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