

**ML TASK 4 - Athika Fatima - 101502209**

Industry	Problems	Difficulty	Solution	Problem Type
Healthcare	Recent News from Kitchener: 'n' number of people in Kitchener did insurance scam using fake bills.	Medium	Fraud Detection through analysis of fraudulent insurance claims and billing discrepancies.	Classification (Classifying transactions as fraudulent or legitimate.)
	A relative was detected with stage 4 breast cancer, died in a couple of months. What if the disease could have been detected earlier using previous tests.	Hard	Image analysis and interpretation using abnormality detection in X-rays, MRIs, and CT scans faster and more accurately than manual reviews.	Classification (Classifying medical images as normal or abnormal.)
	During my previous course, I came up with the idea of NFT Reward based blood donation system, since only 2% of the Canadian population is eligible to donate blood, and according to statistics, every minute there are at least 2-3 people that require blood. As wild as the statistics sound, apparently they are true. Maybe integration of an AI to quickly list closest blood bank that has the required blood type.	Easy/Medium	The AI integration enables real-time analysis of blood type availability, quickly matching recipients with the nearest blood banks that have the required blood type, ensuring timely and efficient distribution of blood resources.	Clustering (Clustering hospitals or blood banks based on proximity and available resources for optimal matching.)
	I was watching 'The Resident' - a medical show, one of the episodes tackling the shortage of employees, nurses and doctors. So maybe a Resource Allocation system	Medium	A resource allocation system optimizing staff scheduling and equipment use in hospitals.	Regression (Predicting optimal staff allocation and equipment usage based on historical data.)
	I was watching another medical show "House MD", one of the episodes showing how a medication in a proven clinical trial backfires because of difference in genetic mutation which gets me thinking - my brother is undergoing a clinical trial too. So maybe using AI to optimize the patients selected for it?	Hard(also a little terrying)	Clinical Trial Optimization for selecting right patient cohorts using genetic and demographic data. Also, monitoring patient responses to improve trial outcomes.	Classification (Classifying patients into appropriate cohorts and response categories.)
	Last one, a Worldwide+personal pain point. Translating doctor language into medical noob vocabulary. Whenever someone in my family is diagnosed with something, I have to spend precious time researching the inside out of the extremities, precautions, long-term solution and care. Yes, doctors do instruct specifics but they often sugarcoat it in order to not instill panic unless necessary. ChatGPT can do it, but a medically approved AI agent.	Hard(because a mental health app once told a patient to kill itself so you can never really trust AI)	Translating medical instructions, terms and conversations to make healthcare accessible to non-medico speakers through an AI agent that can also list stages, care and other research-oriented information.	Clustering (Clustering healthcare terms and instructions based on context and complexity for better translations.)
	In the blockchain program, we started with 55 people but only 35 graduated.	Medium	Predictive analytics to identify at-risk students based on attendance, engagement, performance, and other factors.	Classification (Classifying students into "at-risk" vs. "not-at-risk" categories.)

<b>Education</b>	One of personal favorite problem statements, it is always a challenge taking notes during a lecture. Listening to the professor while simultaneously noting down what is important is a significant task.	Hard	Live Note-taking application that optimizes the output with AI, highlighting the important points mentioned during the lecture. I tried something like this in 2020 during the OG online class era, maybe a do-over with the newly equipped information nadd knowledge from this course might help me succeed.	
	BSSN@GBC. I have a black friend who told me the real reason behind this - Massive number of black students dropping out for not getting the right support.	Medium	An ML solution to identify underserved communities and provide targeted support using data-driven insights.	Clustering (Clustering communities based on various socio-economic factors.)
	Peer Partner - Finding the right study group for you.	Easy/Medium	AI driven peer partner finder, one that finds you the right study group or MAYBEEEEEE BECOMES YOUR PEER PARTNER(The caps indicate the Eureka moment I experienced here)	Regression (Predicting and ranking the best peer partners based on user preferences and historical data.)
<b>Banking</b>	Financial Literacy - A topic many people including myself do not take seriously	Medium/Hard	A AI-based financial advisor or Investment Optimizer, can be embedded on an exchange or MAYBE become a USP of an exchange where the AI can curate plans for you, invest for you through one-clicks and report/notify you of changes in simple terms.	Classification (Classifying optimal investment strategies for users based on their preferences.)
	Islamic Banking/Ethical Financing	Hard	Investments, transactions and other operations can be analysed using ML and data driven analysis of financial statements, investments etc.	Classification OR Association (Classifying financial health or risk levels of investments.) (Associating legal requirements with Shariah Compliant/Ethical Compliances.)
<b>Ecommerce</b>	Too much AI already exists here, so I'll honestly pass but writing one for the marks. Augmented Reality experience during Online Shopping through virtual try-ons.	Hard	Enhancing online shopping with virtual try-ons or room simulations for furniture.	Association (Finding associations between products and customer preferences or environments for virtual try-ons.)
<b>Gaming</b>	Inspired by the Bollywood movie, Ra-One: AI powered Non Playing Characters.	Hard	AI powered NPCs to adapt to player actions, making them more intelligent and responsive, thus providing more immersive and challenging interactions.	Reinforcement Learning (Using reinforcement learning for NPCs to improve their behavior through feedback from player actions.)
	Another fond memory from childhood is playing GTA or even SuperMario and using Cheat codes to bypass the game.	Hard	An AI to detect such anomalies in real-time by analyzing patterns preventing unfair advantages in multiplayer games.	Classification (Classifying player behavior as normal or cheating.)

Other Industry	Working with startups, I realised one major reason why many of them fail - REGULATION/COMPLIANCE	Hard	A startup regulatory/compliance manager. You enter a startup idea, the AI lists out all the geographical, international as well as any other compliances that one would need to tackle. Also, the steps to go about, for each of them. Also, The changes/tweeks one can make to become compliant would be an added bonus/feature.	Association (Associating legal requirements with business model and geographic location.)
	Ram Shree Ram, the angel investor of google, invested only \$250k in a project that was operating out of a garage. During their IPO just 6 years later, his shares alone were valued at \$600M. Imo, the best way to make money is through INVESTING RIGHT and EARLY. Now, I understand 250K is also a big amount but we are talking about any amount and any idea here. So why not, a crowd-sourcing platform that not only increases the number of moonshots we take but also tailors these moonshots for us?	Hard	Crowd funding platform for small projects with an AI integrated agent that tailors your investment portfolio to not only accomodate your risk-taking ability but also your expertise to provide inputs and advise to the the receiver.	Regression (Predicting investment allocations and portfolio performance based on user profiles.)