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Post #1

I had the pleasure of presenting my findings for my final year project which assessed the kinetics of steam distillation to extract D-Limonene from citrus peel waste. Carrying out this project helped me realize the interest I have in waste valorisation and obtaining high value products from waste. Citrus peel waste is not only limited to extracting D-limonene from it, but can also be utilized to produce ethanol, biogas or bio sorbents which I one day hope to explore!

I would like to thank my supervisor, Mr. **Zwonaka Mapholi** who guided me and helped me develop my researching capabilities. I would also like to thank **Stellenbosch University - Department of Chemical Engineering** for giving me the opportunity of fulfilling this young boy's dream of becoming a Chemical engineer!

Post #2

A visual demonstration of utilizing steam Distillation to extract essential oils from citrus(clementines) peel.
Reaching the stage where I could finally visualize the essential oils that have been extracted was definitely not a linear and straightforward path!
There are still changes required to the setup to overcome challenges such as flooding and channeling within the column.
But for now I'm happy with the progress!

Post #3

D-limonene, an essential oil, is one of many high-value compounds that can be found in citrus peel waste. D -limonene has numerous applications in the food, cosmetic, and pharmaceutical sectors. Due to its distinctive aromatic, anti-microbial, and therapeutic properties, D-limonene has a wide range of applications.

Steam distillation is a well-known and popular traditional technique for obtaining essential oils from citrus waste. Despite being preferred due to its straightforward equipment needs and lack of a solvent requirement, steam distillation has several inherent drawbacks, such as a longer extraction time, being energy costly, and causing the loss of thermolabile compounds.

An innovative method called ultrasound aided extraction has been developed to address these drawbacks. The reduction in extraction time and simplicity of integration with conventional extraction techniques are the novel method's clear advantages.

This year, my final-year project has been a running investigation into the recovery of d-limonene from citrus peel waste using ultrasound aided steam distillation.

Post #4

I am a big fantasy premier league FAN, but I always struggled to get points. So, I decided “I know a bit about using data to make informed decisions so why not use that to give myself an edge?”

Through the help of chat-gpt, some prompt engineering and good old python jupyter notebooks, I whipped something up.

It was an iterative process. So, from my domain knowledge I know that Salah and Haaland usually produce very high yields in the fantasy league. So, I made sure that one of the constrains stipulated Salah had to be in that team, and another team where Haaland was in it.

So, with everything defined it was time to get an optimised team. And we managed to find an optimal and feasible solution. It produced decent teams, but I can’t it is a team I would expect to get the highest points!

from the earlier iterations, it’s interesting though that the optimiser chose to prioritise more on buying quality defenders compared to spending more on midfielders. I think this showed an emphasis that the optimiser think defenders are a safer option to maximise the number of points mainly due to clean sheet which Is a guaranteed result compared to hoping your midfielder gets a goal. I’m pretty sure there’s a higher probability of getting a clean sheet compared to scoring a goal. Though, I wasn’t satisfied because these early iterations produced midfield options that aren’t really guaranteed to start for their teams. And if a player isn’t going to play at all you won’t score any point.

So, I gave another prompt and said, “How about we take multiple game weeks into account?” the focus now was to choose players who will gain more points over the course of the next 4 games by considering fixture difficulty weighting. This version produced a much more balanced team. It consisted of defender who could have a high yield via clean sheets but also forwards who might score high points. over the course of 4 games. And I think this is the team that I trust most from the different trial and error, it’s not perfect but I have higher hopes for it!