Kush Kotecha

Teesside | kush-kotecha.github.io | kush.kotecha.kk@gmail.com

Profile

I am a graduate Chemical Engineer who is seeking a role where I am able to develop my skills, with the aim of producing high quality, meaningful work - something that I can take pride in and contribute to the success of my team. I have a particular interest in sustainability and renewable energies, but I believe I have proven to be an enthusiastic, effective, and committed individual through a variety of disciplines and I am open to all opportunities.

Education

Masters in Chemical Engineering | 2024 | University of Manchester - First class with honours (IChemE accredited)

- Modules studied in 4th year: Nuclear Fuel Cycle, Numerical Methods & Simulation, Sustainable Energy Systems, Utility System Design

- Modules studied in 3rd year: Batch Processing, Catalytic Reaction Engineering, Multi-component Engineering Separation, Process Control, Process Design, Process Synthesis, Sustainability

- Modules studied in 2nd year: Chemical Reactor Design, Distillation and Absorption, Engineering Maths 2 and 3, Materials Science and Mechanical Design, Momentum Heat and Mass Transfer, Process Integration, Process Optimisation, Process Safety, Solids Processing

- Modules studied in 1st year: Chemical Thermodynamics, Computational Methods, Engineering Biotechnology, Engineering Chemistry, Engineering Maths, Fluid Flow, Fundamentals of Thermodynamics, Process Engineering Fundamentals, Process Heat Transfer

A levels | 2020 | Queen Elizabeth Sixth Form College, Darlington

- Maths, Physics, Chemistry, Computing - A*, A, A, A

GCSEs | 2018 | Egglescliffe School, Stockton-On-Tees

- 11 GCSEs including Maths and English, 3 9's, 5 8's, 3 7's

Skills & Abilities

- An analytical thinker with proven problem-solving skills
- I am a quick learner and can implement new techniques into my work confidently
- Able to think on my feet and devise a range of possible solutions
- A strong team player that is willing to take on different duties/roles in order for the team to be successful
- A confident communicator with solid presentation skills
- Fluent in English and Gujarati, and I have a basic level of conversational French
- Competent computer user, accomplished in Microsoft and several technical software packages, including HTML and SQL experience
- Completed many projects in Python, C#, SQL, HTML, and competed in HP Codewars 2017, 2018
- Experienced with laboratory environments and equipment e.g. small scale distillation columns, cooling towers and heat exchangers, and emulsification sonolators
- Familiar with software such as Matlab and Simulink, Aspen Plus, Sprint and CcalC 2 (University of Manchester)

Work Experiences and Responsibilities

- Dissertation - Wetting of an electrolyte droplet on graphite using Molecular Dynamics - The primary objective of my initial report was to perform a broad range of research about the topic. Having a solid understanding of each component within the system, I was able to offer my own suggestions with a view to deliver work beyond my scope that added value to the overall research of the team. As a result, my simulations showed improvement in multiple properties of the system (particularly the property of interest) and also opened up further opportunities for progression of the system. I was taught how to create the input files for simulation which I supplemented with research focusing on how the system was simulated using Molecular Dynamics, including implementation of thermostats and barostats to control the environment, and use of finite difference and PME methods to optimise run-time and data storage while maintaining accuracy.

While the simulations were running, I delegated some time to creating Python codes which automated certain set-up and analytical procedures. I shared these with my colleagues to maximise their benefit and allow the team to focus on more important tasks. This code was created with abstraction in mind so that they could be applied under a variety of circumstances and included code comments so that they are easy to understand and adapt in the future (in my absence). I then spent some time applying the results to wider context, discussing product feasibility and the future of this technology's development. I had completed all of my responsibilities ahead of the deadline meaning I had time to perform preliminary simulations on another idea I had presented during initial discussions with my supervisor. As the results were inconclusive and did not satisfy the scope I had set for the investigation, I presented my current findings for the report and continued the investigation after the deadline. The resulting work not only discovered the impacts on the system; it also implemented an additional feature which made simulations a closer representation of reality and therefore produced more accurate results. Thus, I shared the files and results with my supervisor so that they could be utilised by the research team.

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- For my 3rd year design project, my group was tasked with designing a para-xylene manufacturing plant that was economically favourable, sustainable, and safe. This was split into 3 distinct parts. The first part involved deciding the best synthesis route so there was a large focus on literature research, data analysis, and collective decision making. I encouraged the team to work together in-person to support clear communication. We started each day with a meeting so that everyone was up to date with the team's progress, and we could identify the tasks for the day. I also took the initiative to spend 30 minutes each morning (in the sauna) to reflect on the team's overall progress and how to achieve the next steps; this helped to give direction during our meetings. The second part was independent and more technical in nature; I developed the optimised process design for a packed bed reactor along with options to perform sensitivity analysis – the model is shared on Matlab File Exchange for others to use and learn from. The third part involved bringing our designs together to analyse the economics, safety aspects, and environmental impacts of the overall facility design and agree on an optimal arrangement. Unfortunately, we were missing a third of our team and another person requested to work from home (partaking in Ramadan). Some of the ways I helped the team to adapt to this issue included allocating tasks that played to each team member's strengths – I was able

to do this confidently as I now had a better understanding of each team member's capabilities, and each individual had a larger workload so fair distribution was important. I also relayed information to our colleague working from home at the end of the day (consisting of progress updates and appropriate tasks to perform) since he was working at night.

- Volunteer work - Provided meals and a fun, safe space for children at a local primary school during holidays as part of the 'Make a Lunch' youth group. I was responsible for preparing the vegetarian option and cleaning up in the kitchen. I have also volunteered to help at a coding club to teach basic coding skills using Python, Scratch, and BBC micro:bit for both children and adults. At university, I would cook large batches of food and hand it out to homeless people in the city and leave them packages containing clothes that no longer fit me, fruit, drinks, and sweet treats. My family also donates regularly to food shelters, making sure every penny is spent effectively and goes directly to those that need it by buying cheap, healthy, long-lasting foods (rice/pasta - carbohydrates; tinned vegetables - vitamins; and tinned beans/tuna - proteins/fats; biscuits - treats), along with basic toiletries (toothpaste; soap; and feminine products). I am eager to get involved with charity work and education work that utilises my skills where I can provide much more value than my wallet can.

- Since university, I have supported my parent's tutoring company by assisting students which allows us to deliver a more bespoke service and meet the needs of each child more closely. Typically, I work with the same students to build a rapport and I am then able to develop lesson plans based on topics that require improvement and the types of activities that the student engages with. During lessons, my main goal is for the student to achieve independence which I do by encouraging them to suggest solutions and asking them questions or providing examples to stimulate their thought processes. These skills can directly translate to preparing key resources to aid communication with stakeholders that lack knowledge and understanding within the areas of discussion and approaching situations in different ways in order to initiate or clarify their understanding.

Achievements and Hobbies

- I am a keen musician and led the percussion section of Tees Valley Youth Orchestra (TVYO). I took part in busking to help raise money for local charities and fund our international performances. I was also part of a

Chinese music group called Yangchin which involved playing instruments such as the yangqin, guzheng, panpipes, and cajon, and we would regularly perform for residents at care homes.

- I played the alto saxophone for 3 years where I achieved grade 5 from the ABRSM exam board. I joined my school's woodwind orchestra and would join the woodwind section of TVYO during Christmas concerts and open days.

- I trained for 11 years in karate and earned my 2nd Dan black belt (British Wado Karate-Do Federation).
- I enjoy staying fit; I go to the gym consistently and have applied to join the British Army Reserves as a Combat Engineer.

- I am an animal lover and have two guinea pigs named Gin & Bean.