Growing up, I experienced structured data evolve in the most sophisticated form possible. Ranging from the number of shots in a rally which will make Roger Federer win, to the ‘fast-counting’ process in a presidency election which has an error margin of less than 1%. This sparks my interest to further find solutions for complex, intractable problems in multi-agent systems through economics, mathematics, and data science.

An episode of Grey’s Anatomy portrays doctors and nurses performing twelve kidney transplant surgeries simultaneously. Given the complexities of procuring even a single kidney donor, there was no way they could find twelve kidneys in one go. Yet, the problem had me on its hook. I went on to learn more about an optimization problem aptly called the Kidney Exchange Problem (KEP). Evidently, economics plays a role even when money isn’t part of the equation. Though top-trading cycles exist as a solution, external factors such as a donor pulling out at the last minute are still unavoidable. By using data and predictive modeling, however, we could organize kidney transplants that minimizes the tendency of someone withdrawing as a donor.

When I took an online data science course by Future Learn, I noticed connection between p-values and hypothesis testing within data science. In KEP, these could measure the probability of an individual pulling out. A doctor can lower the significance value as low as possible, which means a lower probability for an individual not to receive a kidney, although it means doctors would need more, but accurately counted, backup donors. With this method, doctors can therefore find the optimal number of backup donors needed in order for someone that needs a kidney transplant to undergo their operation. This shows minimization is feasible. I am convinced, therefore, that when economics, statistics and data science are brought together they can tackle diverse 21st-century problems.

Hence, to further bolster my solution-seeking capacity, I strive to constantly improve my quantitative analysis skills. During my investment banking course with InvestIN, I learned how the discounted cash flow (DCF) formula enables investors to know the fundamental value in a few years' time discounted to the present, which is significant for any like M&A companies. Yet, there is still a probability for DCF to be inaccurate. Though it might result in top companies such as Zoom & Tesla;  it also might result in companies such as Lidl that fail to innovate in the US market. I noticed the right timing is just as important as having a culturally-sensitive business model that suits each country. So, I hypothesized a formula for DCF that can detect outliers will include a country's unique culture and competition. I am excited to learn more in order to make a model that can predict future businesses more accurately.

Being the head of Indonesia Society at school also improves my creativity skills, as I composed a play that was performed at Theatre Severn, Shrewsbury. The play features Indonesia’s diverse culture which gradually changes due to globalization. As a leader, I am trained to listen to diverse concerns and find just solutions. In debate, I joined the National Schools Debating Championship where I represented my Province (DKI Jakarta) and went against 36 provinces. Though being runner-up, I learned to be persistent as due to time difference, I debated from 2 in the morning everyday for a week. To further improve my communication skills, I interned as a business executive at Allianz Insurance, where I was exposed to answer unexpected questions within seconds as I met procuring new clients.

The evolution of data has accelerated exponentially, making it ubiquitous in all aspects of work. My unwavering urge to solve world issues, along with my undying passion for economics, mathematics, and data science makes me look forward to luxuriating myself in studying them at university, both inside and outside of the classroom.

Hi Nathan,

I love where this essay is going, especially for a prospective Imperial College London applicant. This essay has highlighted not only passion and motivation to study data, economics, and mathematics, but also a depth of knowledge and experience in the field. However, this essay could have more depth if you also showcase some independent exploration of the topic that revolves around theory (eg: reading books, research papers, etc). Imperial College is undoubtedly an excellent institution that relies heavily on applying theory to practice, and by being able to showcase that you are able to have your own imaginative thinking based on what is written in a book or journal or even in a video/talk shows that you are willing to sit through theory and explore its practicality.

Lastly, please focus on structuring the essay so that you don’t repeat statements. Watch out for grammar mistakes and punctuation errors (though I’m not seeing anything too noticeable so far).

I wish the best for your application. Looking forward to the progress of this essay

-Calysta, Essay Editor