My fascination with the world of Physics began while I was training to be a concert violinist. The standing waves resonating at my fingertips inspired me to delve deeper into higher level Physics. As my fluency developed, a heightened understanding of the beauty behind mechanical oscillations began to emerge. From the familiar electron orbitals expressed as probabilistic wave functions to how fundamental particles could be viewed as vibrations in higher dimensions, a curiosity about how we describe the universe was ignited. Since then, I have found that the pursuit of understanding mechanics through the lens of Mathematics has engaged my interest like no other subject, thus unequivocally prompting me to devote my undergraduate scholarship to the study of Mechanical Engineering.

As an active participant in the Harrow Engineering Society, I pursue a wide range of projects during seminars that deepen my grasp of mechanics. Inspired by how physical systems could be described beyond the confines of Newtonian mechanics, I decided to research Lagrangian mechanics as part of my internal research project. By investigating the behaviour of a simple compound pendulum, I was able to derive an expression for the moment of inertia using the Parallel Axis Theorem. Having researched extensively how to apply the Euler-Lagrange condition, I could predict the behaviour of my system. I found utilising problem solving by drawing on multiple advanced techniques to be one of the most academically rewarding endeavours I have undertaken.

While interning at the Petroleum Authority of Thailand, I observed the applications of sense and control mechanisms to automated machines. The use of sensor circuits to detect light, contact, and pressure were integrated seamlessly into the gas production line. Inspired by the benefits of automation, I self-studied C++ and initiated Arduino-based projects, including an Arduino car controlled by a joystick with dual-axial variable resistors. I used two DC motors and an H-bridge DC motor driver to enable the vehicle to run left and right and learned the hard way that hardware and software do not always play well together in control systems. As an intern at EGCO power plant, I familiarised myself with the combined cycle power plant control and the principles of gas and steam turbines utilised for the generator. I realised electrical generators are part of a wider field of products innovated by the knowledge and experience of Engineers, who use modelling and the predictive power of Mathematics to create and control systems.

As an academic scholar, I have achieved Golds for the UKMT Senior and Intermediate Challenges, a Distinction of Merit in the Mathematical Olympiad and Kangaroo and 'Best of the Year' in the UKMT Senior Challenge. Also, I achieved Gold for the Oxford Physics Olympiad and the Senior Award for Merit from TCS Oxford Computing Challenge. As a believer in Dweck's growth mind-set, I feel that academic competitions empower me to develop my repertoire of skills. I am a Music Scholar with Violin Grade 8 Distinction, and the Head of the Viola section in the school orchestra. Music complements Mechanical Engineering well, as music teaches me communication, creativity, teamwork, and responsibility.

I aspire to be a Mechanical Engineer; an innovator who is keen to apply knowledge of advanced engineering to model the real world and create breakthrough designs that are life-changing and user-friendly, similar to what I have read about Don Norman's "The Design

of Everyday Things." I am confident that undergraduate study at your university will be a crucial stepping-stone towards this ambition.