Masters of Electrical Engineering at CalTech

Statement of Purpose of Saturnin Pugnet

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30,000. This is the average number of days a human has on this planet. It is neither too short nor too long; it is simply what one has. Not a single year, day, hour or even second of this time should be wasted, this is what ignites the energy within me every day to strive towards achieving my goals. I will present how I have made use of the first 7,500 days and how I intend to flourish over the remaining 22,500.

A fundamental goal for my career is to produce tangible changes for humanity that will persist well beyond my remaining days. I strongly believe that to have unprecedented repercussions, you need to have an unprecedented approach. Historically, notable discoveries have often been made in fields with thoroughly established concepts, through unconventional approaches and particularly through interdisciplinary collaboration. Prime examples are the recent apparitions of neural networks and genetic algorithms, exemplifying the major benefits of merging seemingly unrelated fields like biology and computer science. Nowadays, over-specialization might have superseded the polymath approach of scientists of yesteryear. However, having in-depth knowledge spanning several fields helps to foster the eclectic mindset required to conduct such groundbreaking research and hone in on fundamental truth and innovation.

I have put my all into integrating this ethos into my academic career and flowering it into more than just thought. In the past 4 years, I have concurrently studied at two different universities; two degrees in two different countries: Computer Science at Imperial College London and Business and Management at Nice Sophia Antipolis in France. Since I started university, I have sustained myself financially through awards, loans and numerous hours in part-time jobs. Now that I have completed my Computer Science degree, I have begun working full-time at Amazon while finishing off my business degree in France. Without the authorization to be too specific, I can disclose that I have been working on user-adaptive Alexa AI components.

What makes a person is not only their strengths, but also their weaknesses, and the first step in mitigating the latter is self-awareness. My most prominent imperfection is my language skills which, despite not being an obstacle to my work or my studies, still offer room for improvement. I have been remedying this in my spare time since graduation through regular reading, writing and communication skills development.

In my final year at Imperial, I wrote a research paper about cryptocurrency mining hardware optimization which I am currently in the process of publishing. I consider this thesis a major stepping-stone in my development, as it marked the first time I was given the opportunity to combine my in-depth knowledge of two different fields. Indeed, in order to obtain a performance optimization algorithm for GPU mining, understanding the economic context of cryptocurrencies was essential. The impressive results obtained by this interdisciplinary approach stimulated me immensely and furthered my desire to

study new areas of science.

Beyond my studies, I have been an active member of university life, personifying the community ethos. I have led several societies and expeditions; for example when I was aged 18 a cycling expedition across Europe of more than 5500km, as a representative of Imperial College. This first taste of exploration has been particularly impactful on my personal development. Among other things, facing adversity in the form of stolen bicycles, extreme financial limitations and even physical injuries taught me that perseverance can take one further than one thinks. Among my volunteering activities, I spent several years as a hall senior, mentoring freshman students to integrate to university life. While spending a large amount of time advising others, I realized that learning is much more enjoyable when paired with a desire to help.

I now want to extend the scope of my knowledge further, before actively applying it in the academic or entrepreneurial world. More specifically, my aim is to acquire a deeper understanding of Electrical Engineering and Physics, subjects which I considered key tools for my future plans, particularly when paired with my current knowledge in Computer Science and Economics.

Caltech stands out as the ideal place for me to pursue my Master's degree dream. It has integrated computer science in most research fields presenting numerous opportunities for innovative cross-field research, such as nanotechnology or robotics. Moreover, the focus on having a singular collegial, interdisciplinary atmosphere for research, shows the involvement of the university in cross-field collaboration and its determination to bridge disciplines. An example which stands out is the work of professor Pietro Perona and his Ph.D. students, where they are looking to improve animal recognition so that global wildlife can easily be monitored easily. This application of knowledge in several fields focused on the greater good aligns with my principles and objectives perfectly. Places such as the CAST provide a synergic environment that matches my mindset, and would be the ideal place for new ideas to blossom and to push the boundaries of science. I will share my fascination for Computing, Electrical Engineering, Physics, and Economics in order to be a fruitful addition to this ecosystem.

In addition to its attractive culture, CalTech's Masters Program in Electrical Engineering offers a large range of possibilities when it comes to courses. Given my interest in Physics, in addition to Electrical Engineering, I am particularly interested in the possibility to study electromagnetic engineering. In addition, robotics would give me the opportunity to deepen my expertise in a partially explored field. In essence, I aim to pursue areas of study extending my previous experience in Computer Science and Economics and completing it with exposure to ideas from Physics and Electrical Engineering.

To conclude, I believe that my multidisciplinary background and research experience aptly displays the interest, intellectual eagerness, and guile required to undertake a Masters in Electrical Engineering at CalTech. Admission would be a great privilege and a resounding call to redouble my efforts towards reaching my ambitions, providing me the opportunity to create change that will last well beyond my remaining 22,500 days.

Thank you for taking the time to read my statement of purpose.