Statement of Reasons

MSc Informatics at TUM

My academic and professional career demonstrates my consistent dedication and proves my suitability for the MSc Informatics program offered at TUM.

Since High School, while studying at a Technical Institute focused on Computer Science, I became familiar with topics such as programming, logic, and mathematics. As I developed my attitude towards solving problems and researching solutions using a scientific approach, my passion for the subject also grew.

That is why I have decided to fully commit to this journey and continually expand my expertise in this field with a BSc in Computer Science.

There, I finally consolidated my foundation through courses in Algorithms, Operating Systems, and Networking. I learned how to formally prove mathematical statements, which I now consider essential in my everyday life, and how to quickly get up to speed with any topic I start studying. At the same time, I delved into complex studies, such as Numerical Algorithms, where I explored programmatic solutions to mathematical models, including non-linear equations, systems of differential equations, and linear systems.

My affinity for these subjects enabled me to complete this program in under three years with honors, and I am confident that this mindset and strong motivation will also allow me to complete my Master's degree at TUM.

Moreover, my desire to continue researching prompted me to conduct a research thesis where I developed a framework for analyzing Physics-Informed Neural Networks (PINNs) applied to epidemiological compartmental models. I designed custom early-stopping criteria and conducted a systematic ablation test to compare the performance of different hyperparameters. I've been awarded a research grant to finalize this project as an open-source library, which will aid the scientific community in analyzing PINNs with any differential equation system. This opportunity broadened my perspective and further strengthened my desire to delve deeper into these topics at TUM, where courses like Advanced Deep Learning for Physics (IN2298) and Robust Machine Learning (CIT423004) will solidify my knowledge in the field.

In parallel with my studies, I also gained three years of industry experience as a part-time Software Engineer at Danfoss. There, I acquired expertise in distributed complex systems, microservices architectures, and team dynamics. My proficiency in various technologies, including TypeScript, React, Go, and Java, led to increased responsibility during my career and resulted in a promotion, leaving behind Junior roles. These skills will be a significant advantage during the Master's program, and I intend to master them with the exams in Distributed Systems (IN2259) and Cloud Computing (IN2073).

My interest in international contexts and the reasons that led me to study abroad took shape during a six-month Erasmus program in Sweden, at the University of Gothenburg. There, I studied topics complementary to my Bachelor's curriculum, such as Machine Learning and Functional Programming. This experience, combined with my C2 English certification, gave me the confidence to move abroad without a return date.

The flexibility this program offers, combined with its reputation for being highly stimulating and challenging, is why this university is the right one for me.

Thank you for your time and consideration.