Dear Admissions Committee,

I am writing to express my interest in the Master's program in Computer Science at Tartu University. As I near the completion of my undergraduate studies in Computer Science at Tartu University, I am eager to deepen my knowledge and expertise in this field. The university's strong faculty, research-driven environment, and collaborative community make it the ideal place for my academic and professional growth.

My interest in distributed computing stems from my fascination with fault-tolerant architectures, data consistency, and large-scale service orchestration—key challenges in modern cloud and decentralized systems. At the same time, Cryptography and Security have become a major focus of mine, strengthened by my experience at Cybernetica, where I work alongside experts who pioneered Smart-ID and X-Road. Being part of a team researching zero-knowledge proofs and post-quantum cryptography has fueled my curiosity about securing systems against not only today's threats but also those of the post-quantum era.

By developing expertise in both Distributed Systems and Cryptography, I aim to merge security with scalability, positioning myself as a versatile professional capable of designing secure, high-performance applications that can withstand the demands of a rapidly evolving technological landscape.

During my undergraduate studies, I built a strong software engineering foundation, primarily focusing on Java. My experience includes working with tools and frameworks such as Git, Gradle and Maven, Spring and Spring Boot, Vue and React, and JUnit. Additionally, I have explored languages like Scala, C++, Python, SQL, JavaScript, TypeScript and Idris, broadening my understanding of different programming paradigms and development approaches. Moreover, I have explored Machine Learning and Data Science, using TensorFlow, PyTorch, and Scikit-learn to experiment with data-driven models for anomaly detection, predictive analytics, and image and text generation. Furthermore, I have a strong understanding of security practices, including encryption standards and both stateful and stateless authentication mechanisms.

At the end of my second year, I secured an internship at Cybernetica, which quickly turned into a full-time position in the Taxes and Customs Department. Here, I have played a key

role in the digitization and automation of Estonia's Export System, working on state machines, messaging queues, and business rules management systems.

One of my most impactful solo projects was implementing modifications to the tax system in response to Estonia's yearly VAT adjustments, ensuring seamless adaptation to evolving regulations. Additionally, I have been responsible for maintaining and modernizing the Person Management application - a centralized system for managing natural and legal persons across all Tax and Customs Board systems. This project is crucial in standardizing identity management and providing a unified interface for governmental systems, a challenge that directly intersects with my interest in distributed and secure data architectures.

Beyond industry experience, I have also been involved in academic project. As part of a team of three, I developed a Python plagiarism detector, which required deep knowledge of Abstract Syntax Trees (AST) and code similarity analysis. This project reinforced my ability to apply theoretical concepts to real-world problems, strengthening my research and analytical skills.

My background in algorithms and mathematics is rooted in the strong theoretical foundation I built at Tartu University. Courses such as Discrete Mathematics, Theoretical Computer Science, Algorithms and Data Structures, Automata, Languages, and Compilers have provided me with the necessary tools to analyze algorithm efficiency, ensure correctness, and devise innovative solutions. Additionally, I had the opportunity to take the master's course "Design and Analysis of Algorithms", which deepened my passion for algorithmic problem-solving. This experience not only enhanced my ability to evaluate algorithmic performance but also demonstrated how theoretical advancements translate into real-world optimizations. Moreover, maintaining a GPA consistently above 4 underscores my commitment to academic excellence.

I believe this Master's program will provide me with the knowledge and research environment to contribute meaningfully to Distributed Systems and Cryptography. I am eager to explore scalable architectures, secure communication protocols, and advanced cryptographic techniques to improve modern computing systems. My interests lie in areas such as fault-tolerant distributed consensus, privacy-preserving authentication, and

quantum-resistant encryption. For my thesis, I would like to work on enhancing blockchain scalability, optimizing secure multi-party computation, or developing privacy-preserving identity management solutions. By collaborating with faculty and peers, I aim to apply theoretical advancements to real-world challenges, helping to build more secure, resilient, and efficient distributed systems.

Thank you for considering my application. I look forward to the opportunity to grow academically, contribute to the Tartu University community, and help shape the future of secure, scalable systems.

Sincerely,
Mykyta Voievudskyi