As a full-stack developer with over five years of experience building and scaling user-centric web applications, my work has consistently focused on a single, crucial metric: user satisfaction. I have measured it through performance scores, retention rates, and accessibility audits by optimizing frontend performance by 35%, reducing bounce rates by 20%, and improving Lighthouse accessibility scores by 30% in professional projects. However, I have observed that our understanding of user satisfaction remains fragmented. We rely on isolated signals like load time, interaction fidelity, and heuristic scores without a unified model that captures the holistic, real-time experience of a user interacting with a modern web interface. This gap between measuring metrics and understanding experience drives my research ambition: to develop a Multimodal Model for Quantifying and Predicting User Satisfaction in Real-Time Web Interfaces. I am applying to the MRes in Computer Science at Lancaster University to gain the rigorous methodological training and research environment needed to turn this professional insight into a meaningful contribution to Human-Computer Interaction and Web Engineering.

My professional journey has provided me with both the technical foundation and the empirical perspective necessary for this inquiry. At ICMA Professional Services, I engineered responsive applications using React, TypeScript, and Tailwind CSS, but I also systematically analyzed how technical optimizations translated into user outcomes. For example, implementing code-splitting and lazy loading reduced page load times by 40%, a clear quantitative gain. Yet, the subsequent 20% decrease in bounce rates revealed a more nuanced story about perceived performance and engagement. Similarly, at Paylode Services Limited, leading the frontend development of a payment gateway required balancing aesthetic fidelity with functional reliability. The project's 15% increase in market adoption was not due to any single feature but resulted from a combination of latency, visual feedback, and transactional clarity. These experiences have convinced me that user satisfaction is a multimodal construct, influenced by the continuous interaction among performance, interactivity, aesthetic integrity, and accessibility. Current tools treat these dimensions separately. My goal is to research a unified model that synthesizes them in real-time, enabling predictive and adaptive interfaces.

I am drawn to Lancaster University's MRes program because of its strong research culture in areas that directly support this proposal: Human-Computer Interaction (HCI), Data Science, and Software Engineering. The School of Computing and Communications' emphasis on real-world impact and interdisciplinary collaboration aligns with my applied background. I am particularly interested in leveraging methods from machine learning for real-time analytics and sensor-based interaction modeling, areas of demonstrated strength within the school. Lancaster's research infrastructure, including labs focused on immersive technologies and data-intensive systems, would provide an ideal environment for designing experiments to capture multimodal interaction data (e.g., combining performance telemetry, eye-tracking, interaction logs, and subjective feedback). The structure of the MRes, with its significant

research component and preparation for doctoral study, is the perfect platform to develop this work from a focused proposal into a validated model.

My academic background, while not in computer science, has equipped me with a structured, analytical approach to complex problems. My MSc in International Business sharpened my ability to deconstruct multidimensional systems and evaluate causal relationships, a skill I regularly apply in systems analysis and A/B testing frameworks. Additionally, my professional certifications in Frontend Development and Product Design have deepened my practical knowledge of the very interface layers I aim to study. This combination of analytical rigor and practical implementation skills positions me well to conduct research that is both methodologically sound and grounded in web development realities.

The ultimate goal of my MRes research is to develop a new framework for quantifying satisfaction through a weighted, real-time integration of performance metrics, interaction patterns, and interface state. This could serve as both a diagnostic tool for developers and a predictive layer for adaptive interfaces. I see this work forming the basis for a subsequent PhD application. In the long term, I hope to contribute to academia or industrial R&D, bridging the gap between HCI theory and the practical craft of creating satisfying user experiences at scale.

Lancaster University, with its commitment to innovative computing research and its collaborative, supportive graduate community, is the ideal environment for this ambitious work. I am eager to bring my professional experience, curiosity, and growing research passion to the MRes program, and I am confident that under Lancaster's guidance, I can develop the expertise needed to make a meaningful contribution to the field.