UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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HUGGING FACE, INC.,

Petitioner,

v.

FRIENDLIAI INC.,

Patent Owner.

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IPR 2024-01234

U.S. Patent No. 11,442,775

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DECLARATION OF GHAITH HAMMOURI, Ph.D.

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I, Dr. Ghaith Hammouri, declare as follows:

I. INTRODUCTION

1. Hugging Face, Inc., (collectively "Hugging Face") has retained my services in connection with the above captioned *Inter* Partes Review (IPR) of U.S. Patent No. 11,442,775 ('775 Patent). I have been asked to study and provide my opinions as an independent expert witness regarding technology described in the '775 Patent. I am being compensated at my usual and customary rate for my time. Such compensation, however, does not influence my opinion nor does the outcome of this proceeding impact my compensation.

A. Qualifications

2. My qualifications and professional experience are described in my curriculum vitae. I have been informed that a copy of my curriculum vitae will be submitted with my declaration. The following is a summary of my relevant qualifications and professional experience.

3. I received my PhD in Electrical and Computer Engineer from Worcester Polytechnique Institute (WPI) in 2009. Prior to that I received my M.S. in Electrical Engineering from the University of Hartford in 2004. I also received my B.S. in Electrical Engineering with a second major in Physics and a minor in Math from the University of Hartford in 2003.

4. My PhD work and thesis were focused on cryptography and the use of learning models for extracting unique and secure identifiers from physical hardware.

After my PhD, I worked as a post-Doctoral researcher at WPI where I continued pursuing my research. I invented a technique for fingerprinting CDs and other forms of optical media using statistical learning. During this time, I mentored junior graduate students who joined the (CRIS) lab and acted as their intern advisor where I coordinated with the head of the lab. My post-Doc and research were both funded through a National Science Foundation (NSF) academic grant.

5.   In 2010, I co-founded Intryca (renamed Claveo) in order to commercialize my research. I served as the VP of Technology where I lead the research and development efforts of the company. My research focused on developing statistical learning methods for extracting hardware fingerprints from smart phones. Based on my research, I was awarded a Small Business Innovation Research (SBIR) grant from the (NSF). Further, this research and corresponding development resulted in 3 US patents.

6.   In 2012, I became the CEO (and later a co-owner) of Simtix, a physical security company with customers across the Middle East. The company's products mainly revolved around automating physical security using RFID and Automatic Number Plate Recondition (ANPR) technology. At my role, I spent a significant portion of my time overseeing the technology while supervising the technical team and introducing them to new technologies.

7.   In 2016, I left my full-time role at Simtix to completely focus my attention on Machine Learning. I co-founded Xr.AI, a New York based startup focused on utilizing Machine Learning and Natural Language Processing (NLP) in order to automate the analysis of legal contracts. I served as the Chief Scientific Officer of the company where my work focused on creating a new technology for clause-level vector embeddings using Recurrent Neural Networks (RNNs). For this work, I was awarded a Small Business Innovation Research (SBIR) grant from the National Science Foundation (NSF).

8.   In 2020, I left corporate work to spend more time on my long-term research project of exploring deep connections between learning theory and cryptography. Over the past four years, I have served in a consulting capacity as the CEO of Simtix where I lead the development of Secure-Brain technology, a vision AI engine built on Multi-Modal Transformer technology to be used in security and defense applications. In this capacity, I mentored the development team and introduced them to modern machine learning concepts and tools.

9.   I currently also serve as a consultant for several private companies advising them on the use and applications of AI technology including Large Language Models (LLMs) and Multi-Modal Transformer models.

10.   Since 2023, I have also served as an affiliate research scientist at WPI pursuing research in areas relating to machine learning and security. Specifically, I

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