11 May 2021

Dear USCIS officers,

I am writing this recommendation letter on behalf of Dr. Razvan Marinescu for his petition for permanent residency based on his extraordinary abilities. I had the pleasure to be Dr. Marinescu's XX advisor during his PhD at University College London, and have worked with him since 2014. Dr. Marinescu is a scientist of outstanding talent, who has made many contributions of major impact to our research field, and I strongly support his application for residency in the United States.

I am a Professor of XX at the XX, XX, one of the top 3 neuroscience institutes in the world. My research focuses on rare and young onset dementias, especially Posterior Cortical Atrophy (PCA), the so-called "visual variant" of Alzheimer's disease (AD). My work has led to improved understanding of dementia-related visual impairment and the causes and consequences of atypical AD more generally. I was awarded the 2015 Alzheimer's Society Dementia Research Leader Award, and the 2012 British Neuropsychological Society 10th Elizabeth Warrington Prize. I am one of the leading experts on Posterior Cortical Atrophy, having written and contributed more than 78 scientific articles on this disease. In particular, I am the lead author of the Lancet Neurology article from 2012 on Posterior Cortical Atrophy, which has been cited more than 450 times so far and has been the most influential article on this disease since the study of D.F. Tang-Wai in 2004. Given my expertise, I believe I can offer a good account of Dr. Marinescu's contributions to the field, particularly his work on Posterior Cortical Atrophy and other atypical dementias.

Dr. Marinescu, in collaboration with Dr. Firth and Dr. Primativo, authored the first comprehensive longitudinal study on the progression of Posterior Cortical Atrophy. In this landmark study, Dr. Marinescu used Artificial Intelligence models to estimate the evolution of brain atrophy in the largest study population of subjects of Posterior Cortical Atrophy to date. He resolved precisely which brain regions are affected, and in which exact temporal order, which was until then poorly understood. The article, while recently published in 2019, has already been cited more than 32 times. As a leading expert in Posterior Cortical Atrophy, I can certify that this study was of paramount importance for the field: it provided the very first glimpse into the temporal evolution of Posterior Cortical Atrophy, which is necessary for understanding its fundamental mechanisms and for running future clinical trials. In addition, given that most subjects with Posterior Cortical Atrophy are given drug treatments normally given for typical Alzheimer's disease, this study provided strong evidence that Posterior Cortical Atrophy is likely to be a different disease that will require specialised drug treatments compared to typical Alzheimer's disease.

In his PhD thesis as well as the article submitted to the Alzheimer's Association International Conference (AAIC), Dr. Marinescu was among the very first to study the evolution of brain pathology in different subgroups within Posterior Cortical Atrophy. The work done by Dr. Marinescu proved that different clinical symptoms indeed correspond to different brain regions affected. This work is of major importance for future

personalised medicine, as drugs and therapies tailored to specific individuals or subgroups will be more effective and have fewer side effects.

Dr. Marinescu has done outstanding work on brain diseases other than Alzheimer's and Posterior Cortical Atrophy. His seminal work on the Subtype and Stage Inference (SuStaIn) model has revealed the precise variability in brain pathology in patients with Frontotemporal dementia (FTD), and importantly, found that the patients with the C9orf72 mutation are more diverse than previously thought. Dr. Marinescu, together with Dr. Eshaghi, also authored a prominent study on the evolution of Multiple Sclerosis in the largest cohort to date (more than 3000 subjects), which demonstrated that the brain regions in Multiple Sclerosis become affected in a precise sequence that they mapped. Dr. Marinescu has also recently co-authored another study in the Elife journal on the role that brain neural connections play in Multiple Sclerosis and Alzheimer's disease, as well as another publication on the progression of Huntington's disease, a neurodegenerative disease affecting the motor cortex. All these publications highlight the wide remit of Dr. Marinescu's AI models, in particular the disease progression models, that can be applied to many different brain diseases in order to clarify and understand their progression over time. Given the millions of people around the world affected by these diseases, Dr. Marinescu's work is of large impact to society.

Dr. Marinescu authored articles in the leading journals and conferences of the field. Nature Communications, where Dr. Marinescu co-authored the SuStaIn model, is a journal of outstanding research in all areas of natural sciences, with a 2-year impact factor of 12.121. Brain is one of the leading journals on neuroscience and neurology, where Dr. Marinescu published two articles, one as joint-first author. Neuroimage is another leading journal covering research in neuroimaging, with an impact factor of 5.8. Several well-known and prolific authors have published in Neuroimage, including Karl Friston and Arthur W. Toga. In terms of conferences, Dr. Marinescu has published multiple articles in the Medical Image Computing and Computer Assisted Interventions (MICCAI) and Information Processing in Medical Imaging (IPMI) conferences. These are highly technical conferences where key AI experts in medicine, as well as AI and pharmaceutical companies attend. As a clinical researcher in brain diseases, I can confirm that many of the methods published in these two conferences have a strong downstream impact on the medical problems we work on. In addition, Dr. Marinescu has also published with me as well as collaborators three articles at the Alzheimer's Association International Conference (AAIC), and in particular gave an oral presentation on the results of his TADPOLE study. The standard for being invited to give an oral presentation at the AAIC conference is very high, with fewer than 5% of submissions being offered an oral presentation.

Dr. Marinescu has not only published in the leading journals and conferences of the field, but also reviewed the work of other scientists for these journals. This is a crucial service for the research community, as it helps keep the publication standard to a very high quality. I should emphasize that only leading researchers with domain knowledge and expertise are invited to review for such journals and conferences.

Dr. Marinescu has made outstanding contributions of great impact to field of Artificial Intelligence and Machine Learning in Medicine. He is truly among the very top researchers in his field. Following his PhD at University College London, he was invited to pursue his research further at the Massachusetts Institute of Technology in the Computer Science and Artificial Intelligence Laboratory, the world's best research laboratory for his field. I was very fortunate to have worked with him during his PhD, and I am certain his career trajectory will further increase. I strongly support his application for permanent residency in the United States.

Yours sincerely,

Professor of Neuropsychology