Announces the Ph.D. Dissertation Defense of

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“Deep Learning Architectures and Applications in the Context of Edge Computing”

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DEPARTMENT:
Electrical Engineering and Computer Science

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ABSTRACT OF DISSERTATION
Deep Learning Architectures and Applications in the Context of Edge Computing
The recent rise of artificial intelligence (AI) using deep learning networks allowed the development of automatic solutions for many tasks that, in the past, were seen as impossible to be performed by a machine. However, deep learning models are getting larger, need significant processing power to train, and powerful machines to use it. As deep learning applications become ubiquitous, another trend is taking place: the growing use of edge devices. This dissertation addresses selected technical issues associated with edge AI, proposes novel solutions to them, and demonstrates the effectiveness of the proposed approaches. The technical contributions of this dissertation include: (i) architectural optimizations to deep neural networks, particularly the use of patterned stride in convolutional neural networks used for image classification; (ii) use of weight quantization to reduce model size without hurting its accuracy; (iii) systematic evaluation of the impact of image imperfections on skin lesion classifiers’ performance in the context of teledermatology; and (iv) a new approach for code prediction using natural language processing techniques, targeted at edge devices.

BIOGRAPHICAL SKETCH
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CONCERNING PERIOD OF PREPARATION
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Published Papers:
