

ELAD HOFFER

PERSONAL INFORMATION

Born in Israel, 11 October 1986

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PROFESSIONAL INTERESTS

Machine Learning, Deep Learning, Computer Vision, Signal Processing

WORK EXPERIENCE

2015–2016 Deep Learning researcher, ICRI-CI
Intel Deep Learning researcher at Intel's Collaborative Research Center for Computational Intelligence.

2013–2015 Visual Algorithms and Neural Networks, CVG
Intel Researching and developing Deep Learning capabilities for computer-vision tasks. Part of the Algorithms team in Intel's Computer-Vision Group.

2011–2013 Emulation student, NETWORK DIVISION
Intel Created FPGA prototypes and automation scripts for emulation of network devices.

2005–2009 Commanding Officer , ARTILLERY CORPS
IDF Rank: *Captain (Reserve duty)*
Served as a battery commander (artillery), leading 90 soldiers.
Currently serves on active reserve duty.

EDUCATION

2014–Present Technion, Israel Institute of Technology
PhD (Direct track)
Electrical Engineering Research: *Deep Learning of Representations*
Description: My research explores the machine learning technique known as "Deep Learning" which uses artificial neural networks to learn useful data representations.
Advisor: Prof. Nir Ailon

2010–2014 Technion, Israel Institute of Technology
BSc Electrical Engineering GPA: 90 · *Cum Laude*
Specialized in Computer Engineering, Signal Processing.
Final Project: Real-Time Movie Subtitles Extraction - using image processing and computer-vision techniques.

2004 High-school "Itzhak Rabin", Gan-Yavne
Graduated with honors
Studied Computer Science and Physics
Final Project: Handwriting Recognition.

PUBLICATIONS

May 2015 **Deep metric learning using Triplet network***ICLR 2015
Workshop
contribution*

In this paper we propose the deep triplet network model, which aims to learn useful representations by distance comparisons. We demonstrate using various datasets that our model learns a better representation than that of its immediate competitor, the Siamese network, and discuss future possible usage as a framework for unsupervised learning.

Authors: Elad Hoffer, Nir Ailon

May 2016 **Deep unsupervised learning through spatial contrasting***NIPS 2016
Workshop*

In this work we present a novel approach for unsupervised training of Convolutional networks that is based on contrasting between spatial regions within images. This criterion can be employed within conventional neural networks and trained using standard techniques such as SGD and back-propagation, thus complementing supervised methods.

Authors: Elad Hoffer, Itay Hubara, Nir Ailon

November 2016 **Semi-supervised deep learning by metric embedding***ICLR 2017
Workshop
contribution*

In this work we explored a new training objective for deep networks that is targeting a semi-supervised regime with only a small subset of labeled data. This criterion is based on a deep metric embedding over distance relations within the set of labeled samples, together with constraints over the embeddings of the unlabeled set.

Authors: Elad Hoffer, Nir Ailon

May 2017 **Train longer, generalize better: closing the generalization gap in large batch training of neural networks***Submitted for
review to NIPS
2017*

We examine the initial high learning rate training phase. We find that the weight distance from its initialization grows logarithmically with the number of weight updates. We therefore propose a "random walk on random landscape" statistical model which is known to exhibit similar "ultra-slow" diffusion behavior. Following this hypothesis we conducted experiments to show empirically that the "generalization gap" stems from the relatively small number of updates rather than the batch size, and can be completely eliminated by adapting the training regime used.

Authors: Elad Hoffer, Itay Hubara, Daniel Soudry

COMPUTER SKILLS

Programming

C++, MATLAB, LUA, PYTHON, PERL, CUDA, ERLANG, VERILOG, JULIA

Environments

Linux, Microsoft Windows, Microsoft Office

Other

PyTorch/Torch ML-library, Open-CV, L^AT_EX

OTHER INFORMATION

Awards

2010-2013 · Dean's honor list - Technion Electrical Engineering Dept.

Languages

HEBREW · Native

ENGLISH · Fluent

May 28, 2017