

# Son N. Nguyen

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## Technical interests

Find a challenging position requires machine learning or deep learning skills.

## Education

**Ph.D. in Electrical Engineering** **Graduated: August 2019**

The University of Texas at Arlington, Arlington, TX

**Bachelor of Telecommunications Engineer** **Graduated: May 2012**

Post and Telecommunications Institute of Technology, Hochiminh City, Vietnam

## Technical Skills

**Algorithms and software development:** Using Python(PyTorch, Tensorflow, pandas), MATLAB, C.

**Machine Learning: Deep Learning,** Convolutional Net, AutoEncoder, AWS EC2

**Computer Vision,** Human detection, object matching

**Data Mining,** Hadoop MapReduce

**Embedded Microcontroller,** 32-bit ARM cortex architecture

## Research Experience and Projects

- **Balanced Gradient Algorithm,** (Ph.D. dissertation). Scalable second order training algorithm for **deep** and shallow, **CNNs** and fully connected neural networks.
- **License Plate Recognition System for IPNNL.** The system locates and segments license plates and uses a neural network to recognize plate numbers.
- **Backpropagation with two learning factors** A novel method [1] that uses two learning factors in traditional Backpropagation.
- **Apply Newton's Method to Feed Forward Neural Networks,** Newton's method was used to train Feed Forward Neural Network that dramatically improves convergence speed. Results were submitted in [4].
- **Newton's method applied in Deep Autoencoder** Make Autoencoders converge faster using multiple optimal learning factor, different learning factors are used in different hidden layers.

## Work and teaching experience

- **TMA Solutions, Vietnam** Software Engineer, April 2012-June 2013  
Software quality assurance for Globe Telecom, Manila, Philippines. System Integrated Tester (SIT), assure quality and behavior of Ordering Management System (OMS) and Amdocs Activation Manager (AAM).
- **University of Texas at Arlington** Graduate Teaching Assistant June 2015-May 2019  
Assisted professors in DSP and Embedded Microcontroller graduate classes with over 50 students.

## Awards and honors

- 2019 Lockheed Martin Missiles and Fire Control Graduate Fellowship Endowment Engineering.
- **Vietnam Education Foundation (VEF) fellowship**, cohort 2013. Sponsored and funded by the U.S. government, the fellowship brings Vietnamese students to the U.S. to study graduate programs. I am one of the 40 chosen students in 2013.
- **University of Texas at Arlington, Doctoral Assistantship**. The assistantship funds most of the tuition and living expenses of Ph.D. students.
- **Summer 2019 dissertation fellowship**. The fellowship funds all of the tuition and living expenses for my last semester as a Ph.D. student.

## Publications

- [1] **Son Nguyen**, K.Tyagi, and M.T.Manry, “Partially Affine Invariant Back Propagation.” The 2016 International Joint Conference on Neural Networks (IJCNN 2016), IEEE, Vancouver, Canada, July 2016.
- [2] S.Auddy, K.Tyagi, **Son Nguyen** and M.T.Manry, “Discriminant Vector Transformations in Neural Network Classifiers” The 2016 International Joint Conference on Neural Networks (IJCNN 2016), IEEE, Vancouver, Canada, July 2016.
- [3] P.Kheirkhah, K.Tyagi, **Son Nguyen**, and M.T.Manry, “Structural adaption for sparsely connected MLP using Newton’s method.” The 2017 International Joint Conference on Neural Networks (IJCNN 2017), IEEE, Anchorage, AK, USA, May 2017.
- [4] **Son Nguyen**, M.D.Robinson, M.T.Manry, “Multistep Newton Training in Feedforward Neural Networks.” *Neural Processing Letters* (Under review).
- [5] K.Tyagi, **Son Nguyen**, R.Rawat, M.T.Manry, “Second-order training and sizing for the multilayer perceptron.” *Neural Processing Letters* (Accepted, under revision).
- [6] **Son Nguyen**, M.T.Manry, “Balanced gradient training in back propagation.” *Neural Processing Letters* (In preparation)