

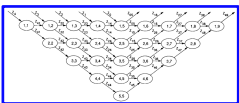
PAUL D. GADER, PhD
University of Florida



IEEE Fellow, Dean's Harris Endowed Professor
UF Research Foundation Professor (2012 – 2015)

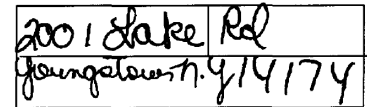
Paul Gader (Ph.D. Mathematics, 1986) is Professor & former Chair of Computer & Information Science & Engineering & an affiliate Professor in Environmental Engineering. He was a Senior Research Scientist at Honeywell System & Research Ctr; Research Engineer/Manager at the Environmental Research Institute of Michigan; and professor at Universities of Wisconsin-Oshkosh (Math), Missouri (Electrical and Computer Engineering) and Florida. He was a Visiting Professor of Signal Processing at Grenoble Institute of Technology, France and Geography & Comp. Sci. at UC – Santa Barbara.

He has been working on multi-dimensional signal and image processing since 1984, when he worked on detection algorithms using Infra-Red imagery. During his 34-year research career, he has focused on transitioning from **mathematical theory to fielded, operational algorithms**. He has been a leading researcher of algorithms for handwriting recognition & landmine detection and has worked on a number of other problems, some of which are highlighted here. He has been leading a multi-university group on collaborative projects since the late 1990s.



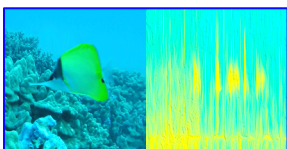
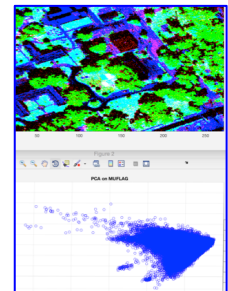
His PhD research was **matrix factorization & mathematical programming algorithms for mapping global transformations to locally connected, parallel architectures**.

In the early 1990s, he led the development of a **5th ranked neural network handwritten character recognizer** and a **top ranked handwritten word recognizer** in a NIST competition.



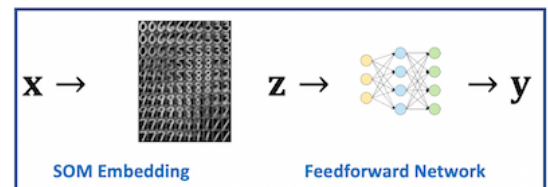
In the late 1990s, he led teams that devised and implemented Hidden Markov Model and Possibilistic detectors in real-time on a **Mine Detection System fielded in Afghanistan in 2008**. The system is featured in a National Geographic Television program: "Bomb Hunters: Afghanistan".

He has investigated **hyperspectral image analysis**, or imaging spectroscopy, algorithms since 2002 for agriculture, the environment, and national security. He has conducted airborne and field data collections. He studies algorithms for linear and nonlinear unmixing, dimensionality reduction, classification, and hybrid physics-based, data-driven computational models using NASA, NOAA and NSF data sets. He was **general chair of the IEEE Workshop on Hyperspectral Image and Signal Processing (WHISPERS)** in 2013 and gave **tutorials on sub-pixel analysis** at WHISPERS in 2016 and 2018.



He is investigating understanding fish behavior using underwater video and multi-channel acoustics. He and his students are currently investigating hidden Markov models, Dirichlet Process Mixture Models, and Recursive Deep Networks, such as the LSTM architecture.

He has worked with neural networks since 1990. He is researching a general problem: the **inability of deep networks to behave in a stable, predictable way** when presented with samples from unknown distributions.



Dr. Gader has published well over 100 journal and over 300 total papers, served for three years as a UF Research Foundation Professor and was named an IEEE Fellow in 2011.