

Luke B. Godfrey

Machine Learning Researcher • SupplyPike
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RESEARCH INTEREST

I research machine learning with a particular focus on artificial neural networks and their applications. I am interested in the application of neural networks to time-series analysis and forecasting, nonlinear dimensionality reduction, and reinforcement learning. Much of my work involves the use of parametric and other non-traditional activation functions to reduce training time, improve generalization, and increase transparency in neural networks.

EDUCATION

Ph.D. in Computer Science, 2018, emphasis in machine learning,
University of Arkansas, Fayetteville, AR 72758

M.S. in Computer Science, 2015, emphasis in machine learning,
University of Arkansas, Fayetteville, AR 72758

B.S. in Computer Science, 2014,
University of Arkansas, Fayetteville, AR 72758

PEER-REVIEWED PUBLICATIONS

Godfrey, Luke B. 2019. "An Evaluation of Parametric Activation Functions for Deep Learning." In *Systems, Man and Cybernetics, 2019 IEEE International Conference on*. Bari, Italy: IEEE.

Godfrey, Luke B. and Michael S. Gashler. 2018. "Leveraging Product as an Activation Function in Deep Networks." In *Systems, Man and Cybernetics, 2018 IEEE International Conference on*. Miyazaki, Japan: IEEE.

Sha, Zhenghui, Luke B. Godfrey, and Michael S. Gashler. 2018. "Modeling Sequential Design Decisions Using Fine-Grained Empirical Data." In *Design Science Research 2018: Workshop on Data Driven Design and Learning*. Montreal, Canada.

Godfrey, Luke B. and Michael S. Gashler. 2018. "Neural decomposition of time-series data for effective generalization." *IEEE Transactions on Neural Networks and Learning Systems* 29, no. 7 (2018): 2973-2985. IEEE.

(TNNLS is the top IEEE journal in neural networks. According to Google, it has an impact factor of 7.98).

- Godfrey, Luke B. and Michael S. Gashler. 2018. "A parameterized activation function for learning fuzzy logic operations in deep neural networks." In *Systems, Man, and Cybernetics (SMC), 2017 IEEE International Conference on*, 740-745. Banff, Canada: IEEE.
- Godfrey, Luke B. and Michael S. Gashler. 2017. "Neural decomposition of time-series data." In *Systems, Man, and Cybernetics (SMC), 2017 IEEE International Conference on*, 2796-2801. Banff, Canada: IEEE.
- Godfrey, Luke B. and Michael S. Gashler. 2015. "A continuum among logarithmic, linear, and exponential functions, and its potential to improve generalization in neural networks." In *Knowledge Discovery, Knowledge Engineering and Knowledge Management (IC3K), 2015 7th International Joint Conference on*, 481-486. Lisbon, Portugal: IEEE.

THESES

- "Parameterizing and Aggregating Activation Functions in Deep Neural Networks." PhD dissertation, University of Arkansas, 2018.
- "Neural decomposition of time-series data for effective generalization." Master's thesis, University of Arkansas, 2015.
- "The Design and Implementation of a Lightweight Game Engine for the iPhone Platform." Undergraduate honor's thesis, University of Arkansas, 2014.

INVITED TALKS

- March 2018, Nowhere Developers Conference, Bentonville, AR. "Deep Learning with Artistic Style (Workshop)."

EMPLOYMENT AND INTERNSHIPS

SupplyPike	Machine Learning Researcher	2017 – Present
University of Arkansas	Graduate Research Assistant	2014 – 2018
J.B. Hunt	IT Intern	2012 – 2014
University of Arkansas	REU Intern	2012
Chick-fil-A	Team Leader (Manager)	2009 – 2012

COURSES TAUGHT INSTRUCTOR

I developed my own course materials for three summer classes at the University of Arkansas, Department of Computer Science and Computer Engineering. In every case, I received mean course and instructor ratings higher than the college average. Scores are on a scale from 0 to 5.

2017, Summer Programming Paradigms, University of Arkansas

Enrollment: 11

Mean course rating: 4.88 (4.67 college average)

Mean instructor rating: 5.00 (4.81 college average)

“My favorite thing about this course was that live code demonstrations that apply what we are learning were given in lecture. This method of teaching is much more effective for me, and gives me an idea of how the concepts learned in class can be applied to real-world scenarios.”

“My absolute favorite parts of this course were the homeworks. They were so much fun to learn java [...]. The abundance of new games in learning java kept my attention up on each subject - which is hard for me. [...] I really don't have any "least favorite" parts of this class; honestly wished all my classes were this straightforward with the students on assignments and questions.

“Luke is ready to teach for sure. Please hire him as an assistant professor.”

“I have learned tons of things from this course, and [Luke] is awesome. I love this course so much!!!”

“Great teacher, does his best in teaching. It is up to the students at that point on whether they can take his material and go forward in it - they need to put in effort on their part too. Luke gives all the materials and knowledge for you to succeed.”

“Absolutely great teacher.”

2016, Summer Programming Foundations II, University of Arkansas

Enrollment 21

Mean course rating: 4.67 (4.64 college average)

Mean instructor rating: 4.86 (4.76 college average)

“This was by far one of the best courses I have taken at this University. The class was full of very useful material and all of it was not just explained accurately and effectively, but was demonstrated effectively as well. This has been one of the most beneficial programming classes I have ever taken and probably the class I've walked away with the most substance wise.”

“Luke did an excellent job of tying together unmotivated concepts from PF1 to provide an excellent survey of searching and sorting algorithms and data structures while applying the principles of object-oriented programming and making use of important c++ concepts of templates, memory management, and the use of pointers and references. The exams, labs, quizzes, and assignments were manageable but difficult enough to

make me learn the underlying concepts each reinforced. Personally, I thought each assignment was very well put together and highlighted a use case of each concept we were using. I'm really glad I took this course since it very nicely tied together what was thrown at us in PF1. Now I feel capable of putting together a non-trivial program in c++ for my own personal use, which was my goal [...].”

“I see you helping students after class almost every day, thanks for working so hard for your students!”

2015, Summer Programming Foundations II, University of Arkansas

Enrollment 19

Mean course rating: 4.60 (4.22 college average)

Mean instructor rating: 4.60 (4.30 college average)

“You are an incredible teacher. You present the information well, come to class very well-prepared, and care about your students and their learning. I wish you the best in your future endeavors, especially if you intend on continuing teaching. Thank you.”

“Mr Godfrey is a wonderful [instructor], he's managed to balance hands on, lecture, and reading effectively.”

COURSES TAUGHT TEACHING ASSISTANT

2017, Spring Programming Foundations I

2016, Fall Programming Foundations II

2016, Spring Programming Foundations II

2015, Fall Programming Foundations I

2015, Spring Formal Languages (Grader)

2014, Fall Programming Foundations I

SIGNIFICANT PROJECTS

October 2016. Spurgeon Morning and Evening iPhone App. Over 18,000 unique users every month.

November 2015. RePete Game on Steam. Over 25,000 units sold.

COMMUNITY AND VOLUNTEER WORK

Hope Community Bible Church	Deacon	2015 – 2020
	Youth Staff Member	2010 – 2020
	Web Designer	2006 – Present