Cosmo Harrigan

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Experience

- **Harvard University** **Boston, MA**
  Visiting Researcher *2015*
  - Designed and trained convolutional neural networks using the Theano, Blocks and Keras frameworks.
  - Conducted supervised and unsupervised learning experiments from high-dimensional vision data.
  - Designed and collected two vision datasets and packaged them in HDF5 format.
- **OpenCog Foundation** **Seattle, WA**
  Research Scientist *2013 – 2015*
  - Lead researcher and developer for probabilistic graphical models and dynamical systems project applying the Probabilistic Logic Networks formalism within a cognitive architecture, leading to a publication in the Springer Lecture Notes in Computer Science and presentations at the AGI 14 and BICA 14 conferences.
  - Mentor for Google Summer of Code project "Probabilistic logical inference on extracted semantic relationships." My student went on to intern at Microsoft and IBM and is now an NLP PhD student.
  - Led a workshop on the OpenCog cognitive architecture at the 2014 AGI Conference in Montreal.
- **ChannelAgility** **Seattle, WA**
  Founder, Software Architect *2010 – Present*
  - Chief software architect of a proprietary demand prediction and price optimization software as a service used by retail partners to improve gross margin and in-stock performance on the Amazon Marketplace.
  - Invited to Amazon headquarters to provide product managers and executive management with suggestions for the product roadmap.
  - Managed the feature pipeline and served as scrum master to the team of software engineers.
- **Streamline Distributing** **Seattle, WA**
  Founder, CEO *2005 – Present*
  - Bootstrapped the company to millions in annual revenue with no outside investment.
  - Managed the leaders of operations, software and logistics teams in offices distributed across 3 countries.
  - Chosen by Amazon for the inaugural 3 day Kaizen process improvement event at Amazon headquarters.
  - Featured by Amazon in the inaugural Fulfillment by Amazon video interviews with company CEOs.
- **Center for Media and Democracy** **Madison, WI**
  Board Member *2012 – Present*

Education

- **University of Washington** **Seattle, WA**
  B.S., Applied Computational Mathematical Sciences: Discrete Math & Algorithms (Honors) 2002 – 2004, 2014 – 2016
  - Thesis: Deep Reinforcement Learning with Direct Policy Search and Regularized Convolutional Neural Fitted Q Iteration.
  - Supervisor: Dr. Dieter Fox
- **Artificial General Intelligence Society** **Beijing, China**
  Artificial General Intelligence Summer School *2013*
- **Singularity University** **NASA Research Park, CA**
  Graduate Studies Program *2012*
  - Chosen as one of 80 admitted students out of over 3000 applicants.
  - Participated in an intensive program on the integration of artificial intelligence and other advanced technologies into society and industry through a combination of innovation and product development.

Publications

- Harrigan, Cosmo. Deep Reinforcement Learning with Regularized Convolutional Neural Fitted Q Iteration. Submitted: Artificial General Intelligence Conference 2016.
- Harrigan, Cosmo. Deep Reinforcement Learning with Direct Policy Search and Regularized Convolutional Neural Fitted Q Iteration. B.S. thesis, University of Washington, 2016.
- Harrigan, Cosmo, et al. Guiding Probabilistic Logical Inference with Nonlinear Dynamical Attention Allocation. Artificial General Intelligence. Springer International Publishing, 2014. 238-241.

Open Source Contributions

- RC-NFQ: Regularized Convolutional Neural Fitted Q Iteration. A batch algorithm for deep reinforcement learning. Incorporates dropout regularization and convolutional neural networks with a separate target Q network. Online: `https://github.com/cosmoharrigan/rc-nfq`
- Neuroevolution as a direct policy search deep reinforcement learning method, implemented using Keras and DEAP. Online: `https://github.com/cosmoharrigan/neuroevolution`
- OpenCog: Applying probabilistic inference and relation extraction in a cognitive architecture. Online: `https://github.com/opencog`
- Minecraft Machine Learning Dataset. Online: https://github.com/cosmoharrigan/minecraft-dataset-generation

Core Technical Skills

Languages: Python, Theano, Keras, Blocks, TensorFlow, Jupyter, Pandas, NumPy, SciPy, C++, Java, C#, LaTeX
Subject Areas: Reinforcement learning, deep learning, artificial general intelligence, entrepreneurship