

# Graham Morehead

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1855 Saint Francis Street 707 Reston, VA 20190 / 617-970-9688 / graham.morehead@gmail.com

- SYNOPSIS** Computer Scientist | Entrepreneur | Speaker  
6+ years management | 20+ years technology development
- EDUCATION**
- Master's Degree**, Computer Science  
University of Maine, Orono, ME, May 2014
- Graduate coursework**, Cognitive Science, Machine Learning  
Harvard University, Cambridge, MA, 2004, 2006
- Bachelor of Arts**, Physics  
Boston University, Boston, MA, May 1995
- Exchange program**, Physics  
Universidad Autónoma de Madrid, 1992-1994
- SKILL SET**
- Speech Recognition, Natural Language Understanding, Computational Linguistics, Complex Adaptive Systems, Artificial Intelligence, Enterprise Resource Planning, Business Intelligence, Data Mining, Machine Learning, Mobile Apps, Multi-Agent systems
- Perl, Python, R, AMX, C++, Java, Pascal, Ada, Lisp, Javascript, PHP, VB, SQL, LaTeX
- Linux, Unix, Windows, OS X, iOS, AMX, Android
- Server Design, Scientific Equipment, Control Systems, Video Conferencing, A/V integration, Network Admin, PBX, Firewalls, Virtualization
- SPEECHES**
- TED Talk 1** : [Save the Urchin Fishery with this one weird trick!](#) (November 2013)  
Complex systems-based model of a sea urchin ecology – a possible solution for Maine's ailing urchin fishery.
- TED talk 2** : [The slings and arrows of school and career](#) (January 2014)  
A few of the ups and downs I went through before I found the career and direction I now have.
- TED Talk 3** : [Save the Urchins ... for TEDxYouth](#) (March 2014)  
I was invited to present the Sea Urchin Ecological model again, but for the TEDxYouth audience.
- TED Talk 4** : [Complexity is not Complicated](#) (April 2014)  
Three disparate narratives concerning an incarcerated man, the urchin fishery, and human language. Starlings tie them all together.

**PUBLICATIONS  
and other writings**

**A Complex-Systems Approach to Simulating the Sea Urchin Ecology**

*Graduate Thesis* (2014) [[Download](#)]

**Modeling fine scale urchin and kelp dynamics: Implications for management of the Maine sea urchin fishery**

Teresa R. Johnson, James A. Wilson, Caitlin Cleaver, Graham Morehead, Robert Vadas;  
*Fisheries Research* 141 (2013) 107-117

**Costly information and the evolution of self-organization in a small, complex economy**

James Wilson, J. Hill, M. Kersula, C.L. Wilson, L. Whitsel, L. Yan, J. Acheson, Y. Chen, C. Cleaver, C. Congdon, A. Hayden, P. Hayes, T. Johnson, G. Morehead, R. Steneck, R. Turner, R. Vadas, C.J. Wilson; *Journal of Economic Behavior & Organization* (2013)

**A Mad Hemorrhage** Blog (in association with *Nature*)

[https://web.archive.org/web/20140120195041/http://www.scilogs.com/a\\_mad\\_hemorrhage](https://web.archive.org/web/20140120195041/http://www.scilogs.com/a_mad_hemorrhage)

**PATENTS**

**Utility Patent Granted**

- "Peltier-assisted liquid-cooled computer enclosure(Link)", United States 7,817,423, Issued October 19, 2010 – Describes a liquid cooled computer enclosure enabling a plurality of overclocked computational components in a small space.

**Submitted Utility Patents**

- "System for Machine Translation" – using marked lemma dependency trees in a high dimensional space
- "Facilitated Remote Console and Terminal Emulator" – functionality for handheld devices (messaging, paging, documentation access and a terminal emulator).
- "System and Method for Universal Email" – server solution syncing multiple email hosts with central repository and interacting with and automatically recognizing disparate pre-existing client interfaces.

**Submitted Provisional Patents**

- "Cephalized Multi-Access Middleware with High Modularity" – real-time two-way format translation between standard sources and clients on disparate platforms.
- "Empirical Markup Structure" – protocol for pickling parsed web-based data/media; data remains parsed after transference to other devices.
- "Integration of Speech Recognition into a Wireless Data Server" – speech recognition addition to the structure of Middleware technology.
- "System and Method for Interactive Television Use" – audio/video caching and translation methods for use with Middleware technology.

**EXPERIENCE**

**Co-Founder & CTO**

June 2016 – present

Gram Labs, Inc, Arlington, VA

- Developed artificial intelligence to mimic human interaction, including text, speech, voice, and animations with natural body movements learned and generated via deep neural nets: CNNs and RNNs
- Ran a small team developing with Python, Scikit-Learn, and TensorFlow

- Federal Solutions Engineer** March 2015 – June 2016  
Basis Technology, Herndon, VA
- Configured and developed NLP solutions for government
  - Participated in sales across the intelligence community
- CTO** September 2015 – December 2015  
ATARC Big Data Innovation Lab, Washington, DC
- Short-term technical working group to provide recommendations to government
  - Advised on Big Data governance and management
  - <http://www.atarc.org/innovation-labs/big-data>
- IT Manager** September 2012 – March 2015  
R. H. Foster Energy LLC, Hampden, ME
- Managed IT team and infrastructure at 400-person company across northern Maine
  - Created and implemented roadmap for future innovation
- Technical Advisor** July 2012 – December 2012  
SIZESEEKER (AKA FitValet.com), New York, NY
- Statistical analysis of data related to 3D human scans
  - Helped to develop algorithms that improve sizing for online shoppers
  - Provided general strategic advice
- Consultant** (concurrent to graduate work) 2008-2012  
Self-employed
- Developed tools to merge databases with disparate formats
  - Surface scratch recognition program for noisy images
  - Website classification by identifying structures in the source code
- Research Assistant** June 2010 – July 2012 (Thesis work continued to May 2014)  
University of Maine School of Marine Sciences, Orono, ME
- Developed computational multi-agent model for research in economics and ecology to identify and develop sustainable solutions to overfishing
- Teaching Assistant** September 2009 – May 2010  
University of Maine School of Computing, Orono, ME
- Graded papers and assignments for C++ and Python courses
- Software Developer** October 2008 – August 2009  
Emergent Music LLC, Portland, ME
- Coded machine learning algorithms from scratch (e.g. simulated annealing) and statistical analysis (e.g. principle component analysis) that improved video classifiers involved with collaborative filtering for this startup music taste-matching site.
- Software Developer** October 2008 – January 2009  
Trefoil, Orono, ME
- 3-month project to develop a polling application for the Google Android platform
- Research Engineer** October 2003 – October 2008  
Nuance, Burlington, MA
- Member of Language Modeling group (R&D)
  - Built and tested statistical models of n-grams in English, French, German, Dutch, Italian, Spanish
  - Developed tools: parallelizers, tokenizer testers, training data generators, file manager for IVR speech systems.

**Integration Engineer**

September 2002 – September 2006

Totalcom Solutions Inc., Topsfield, MA

- Programmed AMX controllers, Designed GUI for touchpanels; configured Proxim transmitters/receivers, PBX systems, custom Linux firewalls; and integrating video/audio mixers and switches and video conferencing equipment. Coded remote RS232/IR/relay control of all devices.

**Co-Founder & Vice President, Research & Development**

July 1999 – July 2002

SuperWings Inc., Topsfield, MA

- Co-founded company, developed original technology, generated funding
- Managed a \$1M+ R&D budget and monitored all aspects relating to quality assurance and productization
- Authored and submitted 2 utility patents and 4 provisional patents
- Leveraged patent-pending technology to develop software products, including:
- Universal Email – simple email for smartphones, multiple addresses simultaneously, worked on most devices
- Universal Browser – enables browsing on most devices, real-time translation for HTML, WML, XML, HDML, WAP, etc.
- Police Database – enabled wireless access to informational databases.
- Equipt – provided console when connected directly to a RS232 port on servers, routers, etc.
- Instant Dialog – instant messaging for PCs and wireless devices
- Stock Data – wireless access to stock quotes and information
- Fantasy Sports – extension of ESPN Fantasy Sports to wireless devices including Palm, RIM, PocketPC and WAP

**Information Model Engineer**

August 1998 – July 1999

Software Emancipation Technology

- Built large models of C/C++/Java code to map relationships between objects and compute complexity.
- Assist customers in building their own models for the purpose of finding weaknesses in their code.

**Phoneticist**

February 1997 – August 1998

Applied Language Technologies, Cambridge, MA

- Developed phonemic conventions for Speech Recognition pronunciation libraries

**Research Assistant**

part-time 1998

Mass General Hospital NMR Center, Charlestown Navy Yard, MA

- Researched Neuroimaging techniques for regularizing inhomogeneous distortion

**Multinational Channel Support**

September 1995 – June 1996

PictureTel Corporation, Danvers, MA

- Main point of contact for all multinational sales at a time when PictureTel had 51% of the world market share

**Research Assistant**

summers 1992, 1993

Boston University, Physics Department, Boston, MA

- Tested and repaired electronic equipment for the Monopole Astrophysics Cosmic Ray Observatory (Gran Sasso, Italy). Worked with and repaired photomultipliers, circuit boards, various other equipment.

**INTERNATIONAL** Spent six years overseas: U.K., Spain, Canada, India, France, South Africa, Egypt, Saudi Arabia, United Arab Emirates, Ghana, Lebanon, Jordan, Israel, Palestine (West Bank), Germany, Switzerland, Austria, Czech Republic, Oman, Mexico, Syria, Portugal.

Various levels of familiarity with: Spanish, French, Italian, Portuguese, German, Russian, Mandarin.

**VOLUNTEERING** **North American Computational Linguistics Olympiad**

- Managing website for yearly competitions for high school students in US, Canada.

## REFERENCES

### **Roy Turner**

- Associate Professor of Computer Science  
Director of Maine Software Agents / AI Laboratory  
School of Computing and Information Science  
University of Maine, Orono, ME 04469-5741
- 207-581-3909
- rturner@maine.edu
- RELATIONSHIP: Graduate Advisor at University of Maine

### **James Wilson**

- Professor of Marine Sciences and Economics  
348 Boardman Hall  
School of Marine Sciences  
203 Libby Hall  
University of Maine  
Orono, ME 04469-5752
- 207-581-4368
- jwilson@maine.edu
- RELATIONSHIP: Principal Investigator at University of Maine

### **George Markowsky**

- CEO, Trefoil Corp.
- Professor of Computer Science and Department Chair  
Director, Homeland Security Lab  
348 Boardman Hall  
School of Computing and Information Science  
University of Maine, Orono, ME 04469-5752
- 207-581-3940
- 207-581-3941
- markov@umcs.maine.edu
- RELATIONSHIP: Former Advisor at University of Maine

### **Armen Skenderian**

- CEO Totalcom Solutions Inc.  
458 Boston St.  
Topsfield, MA 01983
- 978-337-4892
- askenderian@totalcomsolutions.com
- RELATIONSHIP: Former Manager at Totalcom and SuperWings

### **Jeff Adams**

- CEO at Cobalt Speech & Language
- jeff.adams@byu.net
- 978-566-9626
- RELATIONSHIP: Former Manager at Nuance, R&D

### **Jose Elizondo**

- UI Design Manager, Nuance Communications
- jose.elizondo@nuance.com
- 617-557-4401
- RELATIONSHIP: Former Manager at Nuance, Pro Services