

# Graham Morehead

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## Overview

Master's degree in Computer Science (December 2011)

2.5 years executive management experience

Developed on Linux, Unix, Windows, MacOS, Palm, RIM, AMX, Android

Perl, Python, AMX, C++, Java, Pascal, Ada, Lisp

Data Mining, Machine Learning, Grid Computing, Mobile Apps, Multi-Agent systems, Speech Recognition

Control Systems, Video Conferencing, A/V equipment, Network Admin, PBX, Firewalls

Foreign languages (fluent Spanish, several others non-fluent)

President, Upsilon Pi Epsilon, local chapter (Honor Society, Computing & Information disciplines)

Patent #7,817,423, "Peltier-assisted liquid-cooled computer enclosure", a supercomputer enclosure with components submerged in perfluoro-\*ane family liquids, actively cooled by Peltier-devices.

Blogger for Nature (the scientific journal): [blogs.nature.com/a\\_mad\\_hemorrhage](http://blogs.nature.com/a_mad_hemorrhage)

## University of Maine

Orono, ME

Master's degree in Computer Science, as of December 2011

## Harvard University

Cambridge, MA

2 Graduate Courses, 2004, 2006

## Boston University

Boston, MA

B.A., Physics, May 1995

## Universidad Autónoma de Madrid

Madrid, Spain

Special study program in Physics, 1992-1994

## Research Assistant, June 2010 - present

### *University of Maine, School of Marine Sciences*

Developing a simulation of the Gulf of Maine for an NSF-funded project. Simulation of distributions of sea urchins and urchin fisherman. Biophysical model coupled with learning agents. Various learning algorithms will be applied. Objective: identify distributed methods of self-regulation more robust than the current regime.

## **Private Consultant, January 2005 - present**

### ***Pangeon (DBA), Orono, ME***

Developed tools that intelligently merged databases with disparate formats

Surface scratch recognition algorithm from noisy visual data

Website classification by semantic analysis

## **Software Developer, October 2008 August 2009**

### ***Emergent Music LLC, Portland, ME***

Coded machine learning algorithms (e.g.: simulated annealing, principle component analysis), to improve video classifiers involved with collaborative filtering for a music taste-matching site

## **Software Developer, October 2008-January 2009**

### ***Trefoil, Orono, ME***

Developed a Survey Application for a Google-Android mobile device

## **Research and User Interface Engineer October 2003-October 2008**

### ***Nuance Communications (FKA Scansoft), Burlington, MA***

Language Modeling: Building and testing of statistical models of n-grams in English, French, Italian, German, Spanish, Dutch

Developed tools to test language tokenizers

Automatic generation of training data in Thai, Indonesian

Parallelization of numerous tools for grid computing

Developed tools and a database to manage sound files for telephony-based speech recognition

Analyzed and processed audio files for use in deployed speech recognition systems in English and Spanish

Directed recording sessions in English and Spanish for IVR systems.

## **Integration Engineer, consulted September 2002-September 2006**

### ***Totalcom Solutions Inc., Topsfield, MA***

Installed and programmed AMX Controllers

Designed and developed the corresponding AMX touchpanel control interfaces

Configured Proxim transmitters/receivers, Panasonic PBX systems

Configured Custom Linux Firewalls, File servers, other Network devices

Configured and integrated audio mixers and switches, video conferencing equipment, video switches and modifiers

Coded remote RS232/IR/relay control of all devices above

## **VP Research & Development, July 1999 - July 2002**

### ***SuperWings Inc., Topsfield, MA***

Co-founded company

Developed original technology

Server components – written in Perl, Java, and C++

Client components – for all common wireless platforms: Palm, PocketPC, RIM, WAP, etc.

Developed Middleware technology enabling the flow of data to and from inhomogeneous wireless devices

Managed R&D, QA, and Productization

Managed Budget for R&D (> \$1 Mil)

Wrote and submitted two utility patents:

*"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*

Wrote and submitted four 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", a 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 structure of Middleware technology*

*"System and Method for Interactive Television Use", Audio/Video caching and translation methods for use with Middleware technology*

Provisional patent not submitted:

*"H.323 Middleware Integration Module", addition of H.323 protocol handlers to Middleware technology*

### ***Products Developed:***

Universal Mail

*Based on utility patent, "System and Method for Universal Email"*

*Extends Email to Wireless devices (Palm, RIM, PocketPC, WAP, HDML, etc.)*

*Enables Sending, Forwarding, Replying, Saving, Deleting*

*Simple UI allows simultaneous access to multiple accounts*

Universal Browser

*Based on provisional patent, "Cephalized Middleware with High Modularity"*

*Enables browsing on Palm, RIM, PocketPC, etc., real-time translation for: HTML, WML, XML, HDML, WAP, etc.*

Police Database

*Enabled wireless access to a informational databases (e.g. LocatePlus)*

*Intelligent "Doppelganger" algorithms processed on a cluster (PVM) to ensure unique records*

Equipt

*Based on utility patent, "Facilitated Remote Console and Terminal Emulator"*

*For RIM devices. Provided console when connected directly to a RS232 port on servers, routers, etc.*

*Provided wireless connection for telnet, ssh, document retrieval*

Instant Dialog

*Instant Messaging for PCs and wireless devices*

*Clients for Windows, RIM, server for Windows*

Stock Data

*Wireless access to Stock Quotes and information (merging TheStreet.com, Yahoo)*

Fantasy Sports

*Extension of ESPN Fantasy Sports to wireless devices including Palm, RIM, PocketPC, WAP*

Wireless Messaging

*Virtually Instant Messaging for browser-based interfaces (pull-technology)*

## **Information Model Engineer, August 1998 July 1999**

### ***Software Emancipation Technology, Burlington, MA***

Built rigorous information models of C, C++, Java codebases

Trained others to build models

Created intranet tools to manage customer issues and client models

Helped clients find weaknesses in their C, C++, SQL, and Java code

## **Phoneticist, February 1997 August 1998**

### ***Applied Language Technologies (Altech, later merged into Scansoft), Boston, MA***

Developed phonemic conventions in conjunction with the MIT Spoken Language Systems Group

Achieved improvements on pronunciation standards which caused measurable jumps in speech recognition accuracy for Altech software

Developed tools in Perl to accomplish the following:

*Standardize phoneme libraries according contextual rules*

*Provide access to stored libraries*

*Quickly create BNF grammars for specific applications*

*Tighten logic constructs and produced utterance lists for training data*

Aided the development of the Transcriber and Transcription process

Gained understanding of matching techniques and path searching

## **Research Assistant, part-time 1998**

### ***Mass General Hospital NMR Center, and Harvard University***

Researched Neuroimaging techniques

Studied techniques for extracting information from a weak signal among high noise

Investigated techniques for regularizing inhomogeneous distortion

Developed code to apply "Energy" functions to MRI images

## **Multinational Channel Support, September 1995 June 1996**

### ***PictureTel Corporation, Danvers, MA***

Interfaced as main point of contact for all international resellers of PictureTel Video Conferencing equipment worldwide at a time when PictureTel had 51% of the world market share

Helped to retain and grow a large clientèle

Consulted clients on the global deployment of Video Conferencing

Consulted clients on relevant third-party technologies

Gained knowledge of exchange rates, trade laws, issues in delivery and local support, local digital network availability and compatibility, culture, and business practices in applicable nations

Conducted business in every developed and many developing nations

## **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)

Designed a construction method of a Very Forward Calorimeter for the Large Hadron Collider at CERN

Worked with and repaired photomultipliers, circuit boards, scintillating chambers, and various equipment used for the detection of neutrinos and other particles

Managed a laboratory containing sensitive equipment and materials

## **Language:**

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

## **Travel:**

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.

## **Volunteering:**

North American Computational Linguistics Olympiad, International Linguistics Olympiad