DAVID MONTANA

15 Hathaway Circle, Arlington, MA 02476
Home: 781-641-1611, Cell: 617-335-3911, Email: dmon60@gmail.com

Objective: I am an expert software developer and data-driven algorithm developer searching for challenging problems to tackle.

Software Skills

Programming Languages: Java (15 years), Python (4 years), C/C++ (10 years), PHP (2 years), Perl (1 year), Objective-C (2 years), Ada (3 years), Lisp (4 years)

Other Skills: SQL, HTML, Windows system programming, Linux/UNIX, Socket programming, Distributed systems, Visual Studio, JSP, Embedded programming, QuickTime, CoreAudio

Education

Ph.D. (Applied Mathematics / Robotics) Harvard University, 1986
  Thesis: Tactile Sensing and the Kinematics of Contact
B.A. (Applied Mathematics / Decision & Control) Harvard University, 1982

Professional Positions

HERE (formerly HERE, a Nokia company), Principal Engineer, 2014 - Present
- Working as part of the online map search team developing the algorithms to translate users' map queries to addresses and places of interest (and hence map coordinates)
- Applying a variety of machine learning techniques and other heuristic approaches
- Contributing primarily to online system written in Java and deployed in AWS, and secondarily to offline tools for model training and analysis written in Python, Java and C++

BBN Technologies, Lead Scientist, 1986 – 2013
  Member of different business units working in a variety of application domains:
- Speech and Natural Language, 2012-2013
  - Re-implemented for deployment as web services in C++ a set of experimental perl scripts and C programs for unsupervised topic discovery in a corpus of text documents
- Cyber Security, 2007-2012
  - Worked on mostly classified projects, including a large system for blocking exfiltration
  - Developed the database for an open-source reference implementation of RFCs 3779, 6480 and 6810 defining a resource public key infrastructure (RPKI) for securing BGP
  - Defined and implemented similarity metrics for comparing malware samples as part of a project for determining malware lineage and provenance
- Scheduling and Optimization, 1995-2007
  - Designed and implemented a genetic-algorithm-based crew scheduling system for airlift and air refueling squadrons; led initial prototype development phase
  - Developed agents and infrastructure for a large-scale distributed multi-agent logistics society; led the team implementing (land, sea and air) transportation scheduling agents

- o Implemented components of a genetic-algorithm-based system for both automated and manual scheduling of field engineers to repair tasks
  - o Created a reconfigurable optimizing scheduler with a language for specifying scheduling problems and two user interfaces, one web-based and one Swing-based
  - o Implemented an algorithm optimizing data flow between and within data processing centers
  - o Performed network optimization using genetic algorithms including (i) determining parameters of an ad hoc protocol and (ii) dynamic reconfiguration of networks (as lead)
  - o Led a project to use genetic programming to learn cooperative traffic signal control
  - o Designed multi-robot cooperative path planning algorithms
- Acoustic Signal/Information Processing, 1986-1995 and 2005-2007
  - o Developed and fielded a system to collect, process, and play large quantities of audio and visual surveillance data from a stock exchange floor
  - o Developed (at times as lead) software components of a large operational undersea surveillance system whose function was to automatically detect, associate and track signals of interest
  - o Developed software and ran experiments investigating the use of neural networks for identification of transient underwater signals

Algorithmic Techniques/Areas: genetic algorithms, genetic programming, neural networks, statistical machine learning (SVM's, decision trees, logistic regression, conditional random fields, etc.), multi-agent systems, rule-based systems, etc.

Editorial Positions: Editorial board member of four journals, including seven years as Associate Editor of *Evolutionary Computation*

Papers: Over 40 refereed papers published in journals, book chapters, and conference proceedings

Patents: Recipient of three patents, two in evolutionary scheduling and one in evolutionary robotics

Security Clearance: Top Secret (expired)

More information online: See http://davidmontana.net for a detailed list of projects, papers (including downloadable copies), editorial positions, and patents.