Daniel M. Drucker, Ph.D. `<dmd@3e.org>`   `http://3e.org`

Unix, Python, DevOps, ETL, human factors, neuroimaging, robots, data analysis.   Boston.

SKILLS AND KNOWLEDGE	Operating systems: Linux (primarily Debian/Ubuntu and Red Hat/CentOS) – as a user, developer, and administrator. MacOS X and Windows (as a user, not an administrator). Some experience with Solaris and AIX. Programming languages: Strongest in Python and Unix shell scripting (bash, ksh), and the standard Unix toolchain in general; I have no trouble picking up new languages. I have in the past written in Tcl/Tk, Perl, PHP, C, C#, and I have contributed fixes to open source software in other languages as needed. Databases: RDBMSs such Postgres and MySQL; some experience with NoSQL. Infrastructure: AWS (EC2, S3), GCS, Azure. Docker and other containerization solutions. Git, Subversion, Jenkins, Travis CI.

EMPLOYMENT

Ab Initio Software   Lexington, MA   2016 –
Internal Consultant

- Support clients, including 46 of the Fortune 50, in their use of the Ab Initio ETL software including the GDE, Co>Operating System, Control Center, Metadata Hub, and associated underlying systems.
- Build software solutions on Linux, Solaris, and AIX ranging from low-level system utilities to high-performance data processing engines operating over data warehouse systems spanning tens of thousands of database tables and hundreds of petabytes of data.
- Implement systems to provide data lineage traceability and provide build systems that supply reproducible reporting to end users.
- Teach internal classes in the use of our technologies, and develop additional teaching materials to enhance existing classes.
- Manage and help develop the internal proprietary Help system as well as its open source (nginx and Tomcat) components.
- Develop and maintain internal-facing dashboards, both web-based and using custom designed hardware based on the Raspberry Pi and Arduino platforms, which help teams visualize the current support workload and notify responsible parties of new work.
- Started and manage a lecture series, "Brainfood", wherein my coworkers present interesting scientific concepts, their thesis work, or anything else they find fascinating.

Harvard, McLean Hospital   Belmont, MA   2015 –
Volunteer Visiting Scientist/Developer

- Assist researchers with data analysis and software toolchain development.
- Study researchers' workflows and suggest and implement improvements.
- Help refactor and extend "Stabilitycalc", a Python tool used to monitor fMRI magnetic fields.
- Help researchers with programming against public APIs like that of FitBit.

Interactive Motion Technologies   Watertown, MA   2012 – 2016
Scientist, Software Architect

- Developed software (Python, bash, Tcl/Tk, and C, on Linux) for FDA and CE certified robots that assist stroke and other patients with rehabilitation.
- Made sure the robots followed Asimov's First Law of Robotics by implementing multiple redundant safety systems including emergency power-off systems triggering on logical, electrical, and mechanical faults, with hard real time (<1 ms) decision time requirements.
- Rewrote tens of thousands of lines of legacy Tcl/Tk code in (much less) Python
- Developed software in C for an Atmel microcontroller, replacing the PLC in a new product line
- Developed robot mechanical dynamics simulations in Jupyter/IPython Notebook
- Rewrote the central Xenomai-based real-time robot control loop to use a CANbus architecture
- Redesigned software deployment mechanism, which had been based mostly on manual instructions and loose collections of shell scripts, to use modern Debian packages and containerization
- Mentored junior programmers and interns

Design Science / Core HF   Philadelphia, PA   2010 – 2012
Usability Specialist

- Focused on heuristic analysis, usability testing, statistics, data analysis, and background research in the service of medical device usability and safety, including human factors testing for regulatory approval.
- Specialized in applying principles of human psychology and cognitive performance to improving usability.
- I remain on staff as a consultant to Core HF.

AT&T Easylink, TransactPlus/JP Morgan, Bristol-Myers Squibb   1999 – 2002
Lead, Network Operations; Systems Analyst
At these three positions:

- Developed tools in Perl and shell to monitor Unix systems and networks.
- Supported Unix systems providing financial and other messaging services to 100,000+ customers in a high availability environment.
- Mentored other programmers.
- Created formal documentation of procedures that had previously been passed down orally.

EDUCATION
University of Pennsylvania
M.A. 2006; Ph.D. 2009, Psychology (cognitive neuroscience).
Thesis: Neural Object Representation Spaces and their Metric Properties

I showed a new method of computationally modeling and analyzing functional neuroimaging data using multidimensional scaling-like methods. Code (primarily Matlab) written for my dissertation is available at `http://github.com/dmd/thesis`.

I wrote tools in Python and Matlab to manage long-running computation jobs and the operation of the Penn Center for Functional Neuroimaging cluster, and created a calendaring system, still in use, to manage MRI reservations with complex business process requirements. I additionally took coursework in the theory of human decision-making: the science of how and why people and organizations make mistakes, and how to overcome these mistakes and make rational decisions instead.

I am especially interested in how large quantities of information can be transformed in ways that allow people to quickly and accurately make decisions – whether that be by making computational tools to automate procedures so people can focus on higher-level concepts, or making simulations of large systems and datasets to help quantify how a particular experiment or change in behavior will turn out.

Rutgers University
B.A., 2002, Psychology; Certificate in Cognitive Science

KEY PAPERS
Drucker DM, Kerr WT, Aguirre GK. 2009. *Distinguishing conjoint and independent neural tuning for stimulus features with fMRI adaptation*. J Neurophysiology. `http://3e.org/paper/dci`

Drucker DM, Aguirre GK. 2009. *Different spatial scales of shape similarity representation in lateral and ventral LOC*. Cerebral Cortex. `http://3e.org/paper/scale`

EXTRAS
I am a licensed pilot and fly small sport aircraft; I contribute to numerous open source projects; I contradance and participate in other folk music events.

I have managed my own mail and other network services on Linux at `3e.org` for more than 20 years. I have been using, programming, and administering Unix since 1991.