Ivar Thorson, Ph.D.

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OBJECTIVE

An engineering or scientifically-oriented position on a communicative and collaborative team. Opportunities involving scientific study of a data-driven problem, mathematical modeling, and machine learning are particularly welcome.

SKILLS AND EXPERIENCE

Nike Sports Research Lab (NSRL) at Nike, Inc. MAR 2018 – PRESENT
Big Data Specialist (Contractor, TekSystems)

- Using sensor-rich data sets from an NDA-restricted research project, I generated insights into athletic performance/perception of products, presented these insights periodically to stakeholders, and recommended improvements to engineering systems and study protocols that could increase athlete engagement.
- Collaborated with designers, engineers, and data scientists on prototype ML APIs. Acted as a technical liason between my team, the NSRL, the AI/ML team, and internal/external data scientists.
- Laid groundwork to support the fundamentals of good data science: data validation, error correction, privacy protection, data visibility and accessibility, and periodic data quality progress reports.
- Proposed prototype predictive models of athlete activity with the intent of understanding training loads, reducing injury rates, and improving athlete satisfaction.

Technologies: Python, Java, Jupyter Notebooks, Elasticsearch, Algorithmia, DynamoDB, RDS.

Oregon Hearing Research Center, Oregon Health & Science University SEP 2017 – MAR 2018
Senior Research Software Developer

- Architected and implemented the core classes of NEMS (Neural Encoding Modeling System), an open-source project intended to promote collaboration between auditory neuroscience laboratories and enable apples-to-apples comparison of predictive model performance. See: `http://github.com/lbhb/nems`
- Wrote RESTful API endpoints for the storage and transmission of neural recordings, mathematical models, and associated metadata.

Technologies: Python, Keras, Theano, NGINX, Redis, MySQL, Linux, Slack.
Reference: Prof. Stephen David. (davids@ohsu.edu)

Whibse, Inc. & LegitScript, Inc. DEC 2014 – MAY 2017
Senior Research Developer

- Designed and led implementation of a multi-region AWS cluster to harvest and parse Whois, DNS, HTML records for 300M+ websites every 21 days. Used Clojure, Java, and up to 2500 simultaneous AWS EC2 Linux (CentOS, Debian) instances running 24/7. Data was indexed in a Cassandra cluster, compressed, and archived in AWS S3. Logs monitored using Grafana, Kibana, ElasticSearch, and Logstash. Documented work, mentored other engineers, and handed off project.
- Designed and implemented REST API endpoints for custom search-engine backends, fraudulent website detection, cluster job management, spreadsheet analysis, data aggregation, and data visualization. Prototyped web interfaces to manage compute clusters, internal analyst tools, and client products. Used Clojurescript, React, Javascript, web sockets, JVM, Node.js, and HTML/CSS.
- Statistically analyzed (Clojure, Python) accumulated data from 7 years of 20 human analysts classifying websites; presented findings, and reports to stakeholders (CEO, COO), other developers, and patent attorneys.

Technologies: Agile methodologies, Bash, Cassandra, Clojure, Clojurescript, CSS, Docker, Eclipse, ElasticSearch, Emacs, Git, Gradle, HTML, Java, Javascript, Jenkins, JIRA, JVisualVM, Lein, Linux (CentOS, Debian), Maven, MySQL, Nutch, Openshift, Python, REST APIs, React, Shell scripts (Bash), Slack, Trello
Reference: John Horton, CEO. (john.horton@legitscript.com)

Oregon Hearing Research Center, Oregon Health & Science University SEP 2012 – DEC 2014
Research Software Developer

- Designed and implemented a modular functional programming framework in MATLAB to test >780,000 parameterized functional models of cortical neural activity against experimentally obtained data. Wrote GUI in Swing to browse database and visualize neural model predictions.
- Developed novel mathematical models of cortical neural function that resulted in an academic publication.
- Analyzed neural data mathematically and did model comparison with classical and bayesian inference techniques. Used digital filtering (FIR, IIR), wavelet models, and advanced linear algebra techniques.
- Configured and compiled custom Linux kernels to build a low-cost diskless (netboot) compute cluster.

Technologies: C, MATLAB, MySQL, LaTeX, Linux (Ubuntu), Shell scripts (Bash)
Reference: Prof. Stephen David. (davids@ohsu.edu)

EDUCATION

2009 – 2011 **Ph.D. Advanced Robotics**, *Istituto Italiano di Tecnologia, Italy*
2005 – 2008 **M.S. Mechatronics**, *Nagoya University, Japan*
2000 – 2004 **B.S. Electrical Engineering** , *University of Washington, USA*

PATENTS

US 8821338: Elastic Rotary Actuator
ITALY 0001407702: Attuatore Rotante Elastico con Meccanismo Ipocicloida

LANGUAGES

ENGLISH Native speaker
JAPANESE Fluent, JLPT Level 1
ITALIAN Intermediate

REPRESENTATIVE PUBLICATIONS

THORSON, I. LIENARD, J. DAVID, S. Essential Complexity of Auditory Receptive Fields. *PLOS Comp. Biology, 2015.*

THORSON, I. A Hopping Monopod Robot Incorporating Nonlinear Series Elastic Actuators, Fiber-Reinforced Polymer Construction, and a Concurrent Asynchronous Dataflow-based Centroidal Momentum Balance Controller. *Ph.D. Thesis, Istituto Italiano di Tecnologia. 2012.*

THORSON, I. CALDWELL, D. A Nonlinear Series Elastic Actuator for Highly Dynamic Motions. *IEEE International Conference on Robotics and Automation, San Francisco, USA. 2011.*