Irene Langkilde-Geary

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South Jordan, UT 84095

Desired Position: NLP Research Scientist/Engineer

Skills

Natural Language Processing, Machine Learning, AWS Sagemaker, GoogleAutoML Natural Language, SpaCy, Julia, Golang, C/C++, Python, Perl, Make, Gdb, Valgrind, Zsh, Bash, HTML, CSS, Javascript, Agile Jira, AWS: EC2, S3, Cloudwatch, Athena; Jenkins, MySQL, Scons, Git, Atom, VSCode.

Employment Experience

Natural Language Processing Contractor, **Lifepod**, January 2019-present.
Helped develop voice-based conversational agent using Google's Dialogflow and Amazon's Alexa skills. Wrote custom intent-detection logic based on output of Google's AnnotateText API (which provided dependency-style syntactic analyses and machine-learned sentiment scores) to classify utterance sentiment much more accurately than ML alone. Extended custom dialog manager and wrote batch testing harness (Golang).

Natural Language Processing Contractor, **PipelineEquity**, February 2020-present.
Trained text categorization models using AWS Comprehend/Sagemaker and SpaCy.

Research Scientist/Software Developer, **Cobalt Speech and Language**, July 2015-Sept 2018.
Trained custom domain-specific language models for use with open-source Kaldi speech recognizer. Helped develop production ASR engine extension of Kaldi (C++ code). Wrote or adapted Perl, Python, and Bash scripts to clean and prepare large data sets. Generated specialty sub-domain language models by writing context-free grammar rules and compiling them with Thrax. Acted as a liaison with clients.

Research Hobbyist/At-Home Mother of Five, **Independent**, November 2008-present. Developed omni-directional natural language parser and generator which integrated heterogeneous reasoning techniques, including logical constraints and probabilistic inference (initially in Mozart/Oz constraint programming language, then JuliaLang). Developed novel smoothing technique and more effective variant of logistic regression for text classification.

Research Fellow, **University of Brighton,** UK, June 2007-November 2008.
Developed a template realizer for the REG (Referring Expression Generation) Challenge. Compared several manual and semi-automatic techniques for generating text from data, such as weather forecasts and wikipedia fact tables.

Consultant, **Southwest Research Institute**, Ogden, UT, April 2006-May 2007.
Built a prototype system to automate the generation of some Learning Object Metadata (LOM) Schema for online courses. The reuse of electronic training materials stored in a repository requires that metadata be associated with learning objects so that the materials can be found by searchers. However, the manual creation of such metadata is time-consuming, optional for most fields, and rarely done in practice. This work focused on the General keywords and description fields, as well as the Educational fields of the IEEE standard, and included an evaluation of how well this automatic approach succeeded in matching human-labelled metadata.

Assistant Professor**, Brigham Young University**, UT, December 2002-August 2006.
Theses Supervised
2004, Masters, Dan Su, "A Target-Dominant Approach to Machine Translation."
2006, Masters, Thomas Packer, "Surface Realization Using a Featurized Syntactic Statistical Language Model."
2007, Masters, Robert Van Dam, "Adapting ADtrees For Improved Performance on Large Datasets with High Arity Features."

Courses Taught
CS 330 Programming Languages CS
470 Artificial Intelligence CS 601R
Natural Language Processing

Graduate Research Assistant**, USC Information Sciences Institute**, CA, 1995 to 2002.
Developed the HALogen natural language generation system in the context of interlingua-style machine translation from languages such as Arabic, Korean, Japanese, and Tetun into English. Wrote rules to generate candidate phrases, then ranked the phrases using an ngram model. Tested its coverage (over 92%) and quality by regenerating sentences from the Penn Treebank newspaper text. System was used by half a dozen other research teams. Coding was done in C++ and Common Lisp. Supervised by Kevin Knight.

Summer Research Intern, **Whizbang! Labs**, Provo, Utah, 2000.
Helped develop a system to extract named entities such as corporate officers or jobs available from company websites. Supervised by Dallan Quass.

Summer Research Intern, **AT&T Labs Research**, Florham Park, New Jersey, 1999.
Analyzed human-computer dialogues with a machine learning program to predict the need to transfer to a human operator. Supervised by Marilyn Walker.

Summer Intern, **Microelectronics and Computer Technology Corporation (MCC)**, Austin, TX, 1997.
Developed a generation system to respond to human queries about music and restaurant venues in Austin, TX; converted sql database output to natural language sentences. Supervised by Alex Rudnicky and Bradford Miller.

Development Programmer, **Western Wats**, Provo, Utah, summer 1995.

Helped develop software in C to automate calling people to ask survey questions.

Teaching Assistant, **BYU**, Provo, Utah
Assisted students, graded homework and tests.
Courses:
Advanced Artificial Intelligence, Lynn Beus, Spring 1995.
Artificial Intelligence, Lynn Beus, Winter 1995.
Data Structures, Tony Martinez, Summer 1991.
Programming Languages, Robert Burton, Spring 1991.
Volunteer Missionary, **Church of Jesus Christ of Latter-Day Saints**, Italy Padova Mission, December 1992-June 1994
Contacted people on the street and at their front door to proselyte them. Taught conversational English classes.

Technical and Customer Support, **NetLine**, Provo, Utah, May 1991 to December 1992.
Assisted customers via telephone to install simple printer sharing network based on telephone wire connected to serial ports.

Education

Ph.D. Computer Science, **University of Southern California**, 2002
M.S. Computer Science, **University of Southern California**, 1999
B.S. Computer Science, **Brigham Young University**, 1995, *cum laude*

Awards and Honors

- Dean's Merit Fellowship for Doctoral Studies at USC, 1995
- National Merit Scholarship at BYU, 1989

Patents

- US 6,751,591: Method And System For Predicting Understanding Errors In A Task Classification System, 06-15-2004.
- US 20040034520-A1: Sentence Generator, 02-19-2004.

Publications Available Upon Request

Reference Available Upon Request