Seppo Enarvi

Contact Information

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General Interests

30 years of experience in programming and M.Sc. in software engineering. Specialized in model development for machine learning. Ph.D. from the topic of neural network language models. Worked on various vision, language, and speech tasks for 20 years. Developed neural network models using PyTorch, TensorFlow, and Theano during the last ten years.

My work has involved running experiments, implementing code for training models, and optimizing multi-GPU training. I'm keen to write aesthetic and maintainable code. I want to challenge myself, constantly learn, and stay on top of the research field. I'm motivated by contributing to open source projects and I've also authored several scientific publications.

Education

Aalto University School of Electrical Engineering,
Department of Signal Processing and Acoustics,
Espoo, Finland

Doctor of Science (Technology) — September 2012 to May 2018

- Research Field: *Speech and Language Technology*
- Thesis: *Modeling Conversational Finnish for Automatic Speech Recognition*

Aalto University School of Science,
Department of Information and Computer Science,
Espoo, Finland

Licentiate of Science (Technology) — September 2007 to September 2012

- Research Field: *Computer and Information Science*
- Thesis: *Finnish Language Speech Recognition for Dental Health Care*

Helsinki University of Technology,
Department of Computer Science and Engineering,
Espoo, Finland

Master of Science (Technology) — September 1999 to August 2006

- Major: *Interactive Digital Media*
- Minor: *Telecommunications Software*
- Extended curriculum in mathematics and physics
- Thesis: *Image-based Detection of Defective Logs*

Visits

International Computer Science Institute,
Berkeley, USA

Visiting Researcher — February 2012 to August 2012

- Worked on speech recognition for conversational speech.

Asian Institute of Technology School of Engineering and Technology,
Information and Communications Group,
Pathumthani, Thailand

Exchange Student — August 2005 to December 2005

Work History

Groke Technologies,
Turku, Finland

Machine Learning Scientist — October 2020 to present

- Developing and training computer vision models for the Groke Pro situation awareness system (PyTorch).
- Data pipeline optimization for training on millions of images (TorchData).

Nuance Communications,
Aachen, Germany

Senior Research Scientist — December 2017 to September 2020
NLP/Machine and Deep Learning

- Developing and training Transformer sequence-to-sequence models for the Nuance DAX report generation system (TensorFlow, PyTorch).
- Contributing to public repositories and publishing results in conferences.

Aalto University,
Espoo, Finland

Doctoral Candidate — January 2011 to November 2017

- Worked on subword, class, and neural network language models.
- Developed AaltoASR decoder and server backend (C++).
- Developed TheanoLM language modeling toolkit (Theano).
- Collected a conversational Finnish text corpus from the Internet using data selection algorithms.
- Supervised collection of an acoustic training corpus (DSPCON).

Genera Oy, Helsinki, Finland

Software Designer — May 2001 to January 2012

- Implemented new graphical features to display panel software (C++).
- Designed and developed a distributed system for updating content to KONE InfoScreen elevator displays (C++, PHP, JavaScript).
- Developed image analysis algorithms and designed computer vision systems for timber grading and internal quality control (C++).
- Developed Mitla software for timber measurement and refining (Visual Basic).
- Developed configuration script parsers for control and diagnostics panels (Perl).

Publications

Seppo Enarvi, Marilisa Amoia, Miguel Del-Agua Teba, Brian Delaney, Frank Diehl, Guido Gallopyn, Stefan Hahn, Kristina Harris, Liam McGrath, Yue Pan, Joel Pinto, Luca Rubini, Miguel Ruiz, Gagandeep Singh, Fabian Stemmer, Weiyi Sun, Paul Vozila, Thomas Lin, and Ranjani Ramamurthy (2020)
Generating Medical Reports from Patient-Doctor Conversations using Sequence-to-Sequence Models
In Proceedings of the First Workshop on Natural Language Processing for Medical Conversations

Peter Smit, Siva Reddy Gangireddy, Seppo Enarvi, Sami Virpioja, Mikko Kurimo (2017)
Character-Based Units for Unlimited Vocabulary Continuous Speech Recognition
In Proceedings of the 2017 IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)

Peter Smit, Siva Reddy Gangireddy, Seppo Enarvi, Sami Virpioja, Mikko Kurimo (2017)
Aalto System for the 2017 Arabic Multi-Genre Broadcast Challenge
In Proceedings of the 2017 IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)

Seppo Enarvi, Peter Smit, Sami Virpioja, Mikko Kurimo (2017)
Automatic Speech Recognition with Very Large Conversational Finnish and Estonian Vocabularies
IEEE/ACM Transactions on Audio, Speech, and Language Processing

Mikko Kurimo, Seppo Enarvi, Ottokar Tilk, Matti Varjokallio, André Mansikkaniemi, and Tanel Alumäe (2017)
Modeling under-resourced languages for speech recognition
Language Resources and Evaluation (LRE)

Seppo Enarvi, Mikko Kurimo (2016)
TheanoLM – An Extensible Toolkit for Neural Network Language Modeling
In Proceedings of the 17th Annual Conference of the International Speech Communication Association (INTERSPEECH)

Seppo Enarvi and Mikko Kurimo (2013)
Studies on Training Text Selection for Conversational Finnish Language Modeling
In Proceedings of the 10th International Workshop on Spoken Language Translation (IWSLT 2013)

Seppo Enarvi and Mikko Kurimo (2013)
A Novel Discriminative Method for Pruning Pronunciation Dictionary Entries
In Proceedings of the 7th International Conference on Speech Technology and Human-Computer Dialogue (SpeD 2013)

Programming Expertise

I'm working daily with Python and I have written a lot of C++ in the past. I've used low-level math libraries such as PyTorch, TensorFlow, Theano, and NumPy extensively for modeling various tasks with neural networks. I have a long history of software development, mainly with C++, but I've used a myriad of programming languages ranging from assembly languages to Java. I have experience in parallel programming, GPUs, and network programming.

Spoken Languages

Finnish (native), English (excellent written and spoken), German (fluent written and fair spoken), Swedish (fair written)

Open-Source Contributions

TheanoLM
Author of the open source toolkit for language modeling using neural networks.

AaltoASR
Contributed to Aalto University speech recognizer.

Tensor2Tensor
Contributed to the library of deep learning models from the Google Brain team.

Fairseq
Contributed an implementation of the Transformer model with a pointer-generator network to the sequence modeling toolkit from Facebook AI Research.

PyTorch Lightning Bolts
Contributed an implementation of various versions of the YOLO object detection model to the repository of PyTorch Lightning models.

Last Updated

April 2024