

PATRICK LANGE

Research Engineer

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SUMMARY

Engineer with decade of experience in taking speech and language technology from research and prototyping to production and continuous improvement. Co-author on papers published at top conferences, book chapters and inventor on several patents.

SKILLS

Languages: Python, Java, Typescript, C#, C++.

Technologies: AWS, LLMs, Transformers, PyTorch, Docker, WebRTC, React, Unity.

WORK EXPERIENCE

AMAZON

Sr. Software Engineer
Software Engineer

10/2022 - Present

08/2020 - 09/2022

- Created and maintained on-demand cluster creation infrastructure including sample training scripts used by scientists to fine-tune and evaluate large language models (100B+ parameters).
- Designed and developed dialog research framework promoting flexible and reusable code and enabling rapid experimentation through support for local execution and remote deployment.
- Designed and developed platform for model-in-the-loop data collections and evaluations focused on chat models. The platform has been used to collect many thousands of conversations with a peak of over one hundred daily active annotators.
- Designed and developed code and infrastructure for TEACH data set collection and associated research challenge.
- Improved latency of GPT-2 based chat and knowledge re-ranking models used as part of the Alexa Prize SocialBot Grand Challenge by 65% using ONNX Runtime.

EDUCATIONAL TESTING SERVICE

Sr. Research Engineer
Research Engineer
Assoc. Research Engineer

February 2020 - July 2020

June 2017 - February 2020

August 2015 - June 2017

- Lead engineering team building spoken dialog system used for educational applications. The system has been used to collect over 40,000 conversations from crowd-sourcing workers and students in a MOOC hosted on edX.org.
- Designed and developed real-time feedback API prototype for spoken English including streaming speech recognition service based on Kaldi.
- Developed goodness of pronunciation system using C++ and Kaldi improving correlation with human annotations by 20% relative over baseline system.
- Collaborated with Research Scientists on studies resulting in 30 publication at top conferences incl. ACL, ICASSP, INTERSPEECH, SIGdial, etc.

SELECTED PUBLICATIONS

Towards credible human evaluation of open-domain dialog systems using interactive setup

Sijia Liu, [Patrick Lange](#), Behnam Hedayatnia, Alexandros Papangelis, Di Jin, Andrew Wirth, Yang Liu, Dilek Hakkani-Tur AAAI 2023

Teach: Task-driven embodied agents that chat

Aishwarya Padmakumar, Jesse Thomason, Ayush Shrivastava, [Patrick Lange](#), Anjali Narayan-Chen, Spandana Gella, Robinson Piramuthu, Gokhan Tur, Dilek Hakkani-Tur AAAI 2022

EDUCATION

Phd. Computer Science - unfinished University of California, Davis

10/2022 - Present

M.Sc. Computer Science Staffordshire University, UK

09/2013 - 06/2015

B.Sc. Applied Computer Science DHBW Stuttgart, Germany

10/2010 - 09/2013