

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 of book chapters and papers published at top conferences. 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

10/2022 - Present

Software Engineer

08/2020 - 09/2022

- Contributed to the development of LLM-powered features for Alexa.
- 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

02/2020 - 07/2020

Research Engineer

06/2017 - 01/2020

Assoc. Research Engineer

08/2015 - 06/2017

- 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

09/2019 - 12/2020

M.Sc. Computer Science, Staffordshire University, UK

10/2013 - 06/2015

B.Sc. Applied Computer Science, DHBW Stuttgart, Germany

10/2010 - 09/2013