

Apoorv Vyas

+41-762891921 | apoorv.vyas@idiap.ch | [Webpage](#) | [Google Scholar](#) | [LinkedIn](#) | [Github](#)

RESEARCH INTERESTS

Deep Learning, Automatic Speech Recognition, and Computer Vision

EDUCATION

Indian Institute of Technology, Guwahati	2010-2014
B.Tech, Electronics and Electrical Engineering	CPI - 8.10 (scale of 10.0)
École Polytechnique Fédérale de Lausanne	2018-Present
PhD, Electrical Engineering	CPI - 5.33 (scale of 6.0)

EXPERIENCE

Facebook Artificial Intelligence Research (FAIR)	U.S.*
<i>Research Intern</i>	<i>Sep. 2021-Dec. 2021</i>

- Worked on improving the computational efficiency of wav2vec 2.0 pre-training with Transformer models

Amazon Research	Germany
<i>Research Intern</i>	<i>May 2021-July 2021</i>

- Worked on improving self-supervised training with Transformer models and RNN-Transducers

Idiap Research Institute	Switzerland
<i>Graduate Research Assistant</i>	<i>July 2018-July 2022[†]</i>

- Working on improving speech recognition for low resource languages with unsupervised learning
- Working on scaling Transformer architectures to long sequences

Intel Labs	India
<i>Systems Engineer</i>	<i>April 2015-May 2018</i>

- Developed a method for out of distribution input detection in deep neural networks
- Developed *Low Power Semantic Supervised Shallow Hashing* for fast and accurate retrieval of similar images
- Applied compressed sensing techniques to enable power efficient data gathering in wireless sensor networks

Oracle India Pvt. Ltd.	India
<i>Applications Engineer</i>	<i>July 2014-March 2015</i>

- Worked on web application development using Oracle's application development framework

PEER-REVIEWED PUBLICATIONS

- Vyas, A., Madikeri, S., and Boulard, H. **Comparing CTC and LFMMI for out-of-domain adaptation of wav2vec 2.0 acoustic model.** *Interspeech, 2021.*
- Vyas, A., Madikeri, S., and Boulard, H. **Lattice-Free MMI Adaptation Of Self-Supervised Pretrained Acoustic Models.** *International Conference on Acoustics, Speech and Signal Processing, 2021.*
- Vyas, A., Katharopoulos, A., and Fleuret, F. **Fast Transformers with Clustered Attention.** *34th Conference on Neural Information Processing Systems (NeurIPS), 2020.*

- Katharopoulos, A., Vyas, A., Pappas, N., and Fleuret, F. **Transformers are RNNs: Fast Autoregressive Transformers with Linear Attention.** *37th International Conference on Machine Learning (ICML), 2020.*
- Tong, S., Vyas, A., Garner P., and Bourlard, H. **Unbiased Semi-supervised LF-MMI Training Using Dropout.** *Interspeech, 2019.*
- Vyas, A., Dighe, P., Tong, S., and Bourlard, H. **Analyzing Uncertainties in Speech Recognition Using Dropout.** *International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2019.*
- Vyas, A., Jammalamadaka, N., Zhu, X., Das, D., Kaul, B., and Willke, T. **Out-of-Distribution Detection Using an Ensemble of Self Supervised Leave-out Classifiers.** *European Conference on Computer Vision (ECCV), 2018.*
- Natarajan, V and Vyas, A., **Power Efficient Compressive Sensing for Continuous Monitoring of ECG and PPG in a Wearable System.** *IEEE 3rd World Forum on Internet of Things (WF-IoT), 2016.*
- Vyas, A., Kannao, R., Bhargava, V. and Guha, P., **Commercial Block Detection in Broadcast News Videos.** *ACM, Indian Conference on Computer Vision Graphics and Image Processing (ICVGIP), 2014.*

PATENTS

- Vyas, A, Mehta, D. & Srenivasa, V., **Low Power Supervised Semantic-Preserving Shallow Hashing.** US Patent 15792940, Intel
- Baxi, A. & Vyas, A, **Power reduction of optical heart rate sensor in a wearable Cuffless Blood Pressure patch by Local Polynomial Regression of sub-sampled PPG and by ECG synchronized PPG excitation.** US Patent 15492986, Intel
- Vyas, A & Natarajan, V., **Power Efficient Data Gathering by Joint Compressive Sensing and Shortest Path Tree for a IoT Mesh Wireless Sensor Network.** US Patent 15856994, Intel
- Vyas, A & Natarajan, V., **Novel anomaly prediction method for intelligent power-efficient relay scheduling in an IoT Mesh Wireless Sensor Network.** US Patent 10448415, Intel
- Natarajan, V. & Vyas, A , **Novel compressive sensing scheme for power efficient data aggregation in a spatial IoT wireless sensor network.** US Patent 10149131, Intel

TECHNICAL SKILLS

Programming: Python, C/C++, CUDA, Shell Scripting
Frameworks: PyTorch, Kaldi, Keras, LaTeX
Operating Systems: Linux, Microsoft Windows

MISCELLANEOUS

- Divisional Recognition Award at Intel for excellent contributions to the Bio-sensing project to extract heart rate while typing.
- Secured rank 1901 (out of 500K candidates) in the Joint Entrance Examination (JEE) for IITs.