Tony Bruguier

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Professional experience

Google AI (Automatic speech recognition, ASR) Jan. 2012 - present

- Improved accented speech recognition on device
- Algo design for pronunciation practice search results (press release)
- Designed RNN-T based algorithm for pronunciation learning (paper) and implemented in prod
- Near real-time new pronunciation learning from users' actions (paper)
- Neural network based language models (paper)
- Acoustic model size reduction (LSTM-CTC neural network or other) for embedded ASR (paper)
- Rescoring of speech using LLMs
- Research in Python, model implementation in C++, gluing in app in Java

Brion Technologies (computational lithography startup, later acquired by ASML) Oct 2007 - Jan. 2012

- Creation of a gauge selection algorithm to lower cost of metrology (two patents)
- Created and implemented new model for resist process (patent)
- Wrote both FFTW and FPGA accelerated code

Philips Medical Systems (Intern) 3 summers

- Improved on automated EKG interpretation algorithms for cardiographs
- Wrote optical waveform recognition algorithms

External contributions

Quantum computing: Contributing to GitHub quantum computation library Cirq

Skills

- C++ (★★★), Python (★★), Matlab (★) Java (★), Assembly (☆), Bash (☆)
- ML & AI (DNN, RNN, CNN, LSTM, LAS, RNN-T) and implementation in TensorFlow and PyTorch
- Perforce, Mercurial, Git and Github
- Signal processing, information theory, linear algebra, inferential statistics
- Independently lead research project and if the results are positive implement the real, commercial product
- Rapidly adapt to new problem space (e.g. healthcare, finance, semiconductors, speech recognition)
- Successful in startups and large companies

Education

California Institute of Technology (Caltech): PhD, Electrical Engineering, 4.0 GPA

- *Encoding of Financial Signals in the Human Brain* (https://www.bruguier.com/thesis.html)
- Themes: Analysis of fMRI, inferential statistics, neurobiology, and behavioral economics.

ESIEE, Paris: *Diplôme d'Ingénieur*, major in signal processing

- Graduated valedictorian

Research and publications

See: https://www.bruguier.com/research.html