

# Prashant Krishnan Vaidyanathan

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## Education

### University of California San Diego

San Diego, CA

M.S. in Computer Science and Engineering | GPA: 3.97 | Expected Graduation: June 2023

Sept 2021 - Present

- **Courses:** Algorithms, ML Data Systems, Advanced NLP, Recommender Systems, Programming Languages, Operating Systems, Adv. Text Mining
- **Graduate Student Researcher, Prof. Jingbo Shang:** Developed robust few-shot entity recognition models for document images using multimodal BERT-like large language models and graph neural networks (To be submitted to EMNLP 2023) [**Preprint**]
- **Graduate Student Researcher, Prof. Javier Duarte:** Exploring multimodal self-supervised learning for jet tagging in particle physics

### Ramaiah Institute of Technology

Bangalore, India

B.E. in Computer Science and Engineering | GPA: 9.4/10

Aug 2015 - June 2019

## Work Experience

### Apple Inc.

Austin, TX

Data Scientist Intern, Ad Platforms Data Insights

June 2022 - Sep 2022

- Built time series clustering models using dynamic time warping analyzing budget utilization of Search Ads apps on the App Store
- Created a scalable end-to-end pipeline for EDA, feature engineering and modeling for the top apps contributing to over ~ \$4B annually
- Proposed targeted actionable insights for Sales & Marketing teams to increase revenue across different app clusters

### Indian Institute of Science

Bangalore, India

Research Engineer, LEAP Lab (Prof. Sriram Ganapathy)

Feb 2019 - June 2021

- Developed an end-to-end siamese neural network for backend modeling in speaker verification (~ 25% improvement) [**Code**]
- Built a diagnostic tool for COVID-19 using ML techniques on respiratory sounds with results matching rapid tests [**Website**]
- Developed the Coswara website and managed the database of respiratory sounds of 2500+ users (~ 50GB) [**Dataset**]
- Organized the DiCOVA Challenge at Interspeech 2021. Built baselines, managed leaderboard for 80+ teams worldwide [**Website**]
- Led the collection of a multilingual multi-accent speaker profiling dataset with 300+ speakers and 6+ languages [**Paper**][**Dataset**]

### IBM India Pvt. Ltd.

Bangalore, India

Software Engineer Intern

June 2018 - Aug 2018

- Worked part of GTS Labs solutions for a Function as a Service (FaaS) project for automating service tools for clients
- Developed a PoC to automate the IT Service Management (ITSM) lifecycle using Apache Airflow, Kubernetes and OpenWhisk

### Perpule (acquired by Amazon for \$14.5M)

Bangalore, India

Machine Learning Engineer Intern

June 2017 - Aug 2017

- Developed an automated supermarket checkout verification system using real-time image detection and recognition

## Publications (Selected)

- S. Ramoji, , **P. Krishnan**, and S. Ganapathy, “PLDA inspired Siamese Networks for Speaker Verification”, Journal of Computer Speech & Language , Vol. 76, Nov 2022 p.101383. [**Paper**][**Code**]
- A. Muguli, L. Pinto, N. Sharma, **P. Krishnan**, P. K. Ghosh, R. Kumar, et al., “DiCOVA challenge: Dataset, task, and baseline system for COVID-19 diagnosis using acoustics”, Interspeech 2021, Brno. [**Paper**]
- N. Sharma, **P. Krishnan**, R. Kumar, S. Ramoji, S. R. Chetupalli, R. Nirmala, P. K. Ghosh, S. Ganapathy, “Coswara: A Database of Breathing, Cough, and Voice Sounds for COVID-19 Diagnosis”, Interspeech 2020, Beijing. [**Paper**]
- S. Ramoji, **P. Krishnan**, S. Ganapathy, “Neural PLDA Modeling for End-to-End Speaker Verification”, Interspeech 2020. [**Paper**]

## Projects

- **Document to Image Generation** - Used text mining techniques and large language models for summarization to generate images of long text documents such as poems, articles, etc. using stable diffusion models
- **PDF Question Answer Chatbot** - Used LangChain and OpenAI's GPT APIs to extract embeddings from the PDF to develop an interactive terminal app enabling the user to retrieve information by asking questions [**Code**]
- **Music Generation using Deep Learning Techniques** - Evaluated LSTMs and GANs for music generation using piano MIDI files. Used the Music21 library to parse these files to generate training embeddings [**Code**]
- **Codenames-Haskell** - Developed a terminal UI app of the party game 'Codenames' in Haskell using the brick library. Implemented a client-server view for the dynamic game states, integrated error handling and game logs [**Code**]
- **Vaccine Notifier** - Web-app that emails you updates regarding availability of COVID vaccine slots in your area [**Code**]
- **Neural Conditional Random Fields (CRF)** - Built a BiLSTM model with CRF for named entity recognition

## Skills

**Programming** Python, C, C++, R, HTML, JavaScript, Node.js, SQL, Git, Shell, Haskell

**Tools/Frameworks** PyTorch, Tensorflow, Keras, Git, PySpark, Hugging Face, scikit-learn, Kubernetes, Angular, Kaldi, Firebase