Pratyus Pati

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EDUCATION

- **Columbia University** — New York City, NY
  Master of Science in Electrical Engineering (Data-Driven Analysis and Computation) — *Aug. 2017 – Dec. 2018*
    - **Relevant Courses**: Neural Networks and Deep Learning (Basic + Advanced), Machine Learning, Reinforcement Learning, Sparse Representations and High-Dimensional Geometry, Bayesian Models for Machine Learning, Heterogeneous Computing for Signal and Data Processing, Big Data Analytics, Algorithms for Data Science
    - **Course Assistantship**: Programming Languages - Python, Dev Tech - Linux, Big Data Analytics
    - **Research**: Neural Acoustic Processing (NAP) Lab under Prof. Nima Mesgarani

- **Indian Institute of Technology** — Roorkee, India
  Bachelor of Technology in Electronics and Computer Engineering — *Aug. 2010 – July. 2014*
    - **Relevant Courses**: Computer Systems and Programming in C/C++, Data Structures and Algorithms, Computer Aided Graphics, Computer Architecture and Microprocessors, Discrete Mathematics, Graph Theory, Digital Signal Processing, Information and Communication Theory, Embedded Systems

EXPERIENCE

- **Google Play, Google** — Mountain View, California
  Software Engineer — *May. 2019 - Mar. 2023*
    - **Data Engineering**: Designed and implemented offline and serving data pipelines for the Play Store's Home Page and Details Page recommendations.
    - **Model Improvements**: Experimented with model changes for improving performance measures of Deep Neural Networks (DNNs) used for app recommendations.
    - **Analysis**: Performed data analysis on results of online experiments for studying their impact on Play Store's user engagement and app recommendation quality.

- **Nokia Bell Labs** — Murray Hill, New Jersey
  Deep Learning Research Intern - Autonomous Platforms and Software Systems (APSS) Lab — *Jun. 2018 - Aug. 2018*
    - **Accelerated Training of GANs**: Decreased the training time of Generative Adversarial Networks (GANs) by upto 21% by using model-parallelism in the GAN network architecture on a single-GPU, with the capability to further reduce it quasi-linearly using data-parallelism on multiple GPUs.

- **iRunway** — Bangalore, India
  Senior Technology Research Associate — *Jun. 2014 - Apr. 2017*
    - **Data Science**: Developed COMPASS - A commercial context-aware data-analytic tool for identifying and ranking seminal patents from huge patent portfolios.
    - **Research and Analysis**: Provided research insights on technological aspects of IP litigation to major technology clients.

- **Samsung Research** — Bangalore, India
  Engineering Intern — *Summer 2013*
    - **Shannon-Hedge Network Processors**: Developed an ASIC-implemented Test Harness for testing standard compliance of individual layer modules of Samsung's 3G network processors.

SELECTED PROJECTS

- **Feature Extraction from Audio Files and its Application using Neural Networks (Undergraduate Thesis)**: : Neural Networks for detecting similarities between audio files, specifically music files, for genre classification.

- **Hindsight in Proximal Policy Optimization (HIPPO)**: :Researched and implemented a modification to Proximal Policy Optimization (PPO) algorithm to improve its sample efficiency and improve its performance in sparse learning environments.

- **Accelerated Fractal Encoding using Parallel Computing**: Accelerated OpenCL implementation for compression and decompression of images. Achieved speedups of over 1000x compared to sequential method.

- **Text-to-Image Synthesis using Generative Adversarial Networks**: : Experimented with InfoGAN for the problem of generating images conditioned on a input sentence, which led to more accurate images conditioned on the given text.

- **Sparsity in Deep Learning Networks**: Researched on the methods of sparsifying Deep Learning Networks using a combination of group and exclusive sparsity-based regularization. Achieved accuracy of over 95% on the MNIST dataset using only 40% of the parameters used in a traditional model.

PROGRAMMING SKILLS

- **Languages**: C/C++, Python, Haskell, Scala, MATLAB, LaTeX, SQL

- **Technologies/Libraries**: Git, Hadoop, Spark, CUDA, OpenCL, TensorFlow, PyTorch, Neo4j, mySQL, Scikit-Learn