

# Param Papat

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## EDUCATION

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- **Columbia University** New York, NY  
*M.S. in Computer Science (GPA: 3.915/4.0) [TA: Computer Vision (Fall 19)]* Aug 2019 - Dec 2020
- **Nirma University** Ahmedabad, IN  
*B. Tech in Computer Engineering (GPA: 9.12 / 10.0) [Rank: 3/150]* Jul 2015 - May 2019

## EXPERIENCE

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- **Bosch (Robert Bosch GmbH)** Bangalore, IN  
*Intern - Personalization and Secure AI* Jan 2019 - May 2019
  - Designed flow to test for vulnerabilities in existing Machine Learning systems, including flaws such as Adversarial attacks and Model Stealing.
  - Developed and Patented methods to protect AI systems incorporating Convolutional Neural Networks (CNN), LSTMs, and traditional ML techniques from vulnerabilities. This work opened a new business avenue for Bosch where they provide protection services for ML systems.
  - Developed Recommendation Engine for Hypermarket use-case incorporating active research in Generative Networks and AutoEncoder based Recommendation Engines. Achieved a 70% hit rate in the purchase of products from the items recommended to a user as compared to a pre-existing system giving a 25% hit rate.
- **Canary Mail (Mailr Tech LLP)** Rajkot, IN  
*Intern - Machine Learning* May 2018 - Jul 2018
  - Analysed a wide variety of external factors that affect the Indian Stock Market and Engineered Neural Network systems to incorporate the delayed correlation effects between stocks and factors strongly affecting their movement.
  - Developed an Ensemble of Statistical Cross-Correlation, Causal relationships and time-series machine learning models like LSTM to predict a mix of profiteering stocks with their movement 1 week ahead and auto-invest in them. This system gave up to 48% returns over an investment period of 12 months.
  - Evaluated the seasonality in stocks where some escalate in specific periods like holidays and devised a GRU based Neural Network model to investigate prominent seasonality in all the National Stock Exchange, IN listed companies and output an ideal time to invest and divest for optimum profits. Structured an ensemble of seasonality and the effect of external factors on stock, this accelerated the year-over-year returns to 65%.

## PROJECTS

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- **Predicting the Next-Day Price Movements Through CNN using Technical Indicators.** Sep 2018  
*Keywords : Time Series Data, CNN, Stock Market, Spatial Mapping, Regression*
  - Leveraged the uniqueness of multi-sized filter maps over 2D mapping of of Stock's technical indicators, and achieved an average F1 Score of 0.80 in predicting next day's movement.
  - Devised a unique arrangement of indicators in the input 2D mapping that took into consideration the correlation between indicators and their effect on the actual stock.
- **Real-Time Traffic Congestion System using Deep Learning** Mar 2018  
*Keywords : CNN, Traffic Optimization, Tensorflow, Keras, Object Detection, Ensemble Learning*
  - Engineered an AI system incorporating CNN to detect and count cars, and reinforcement learning to optimize the green light time for a traffic light.
  - Optimized traffic clearance time achieving 27% reduction in congestion clearance time at peak hours.
- **Animal / Object Identification using Deep Learning on Raspberry Pi** Jul 2017  
*Keywords : Tensorflow, Keras, OpenCV, Inception V3, CNN, Raspberry Pi*
  - Developed a light-weight CNN inspired from Inception V3 which achieved a 79% top-5 accuracy at a processing speed of 20 FPS upon Deployment on Raspberry Pi.
  - Published the work in Information and Communication Technology for Intelligent Systems, Springer, 2018

## SKILLS

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- **Languages:** Python, SQL, Tensorflow
- **Technologies:** AWS, GCP, Tableau, Kubernetes, Git
- **Coursework:** NLP, Cloud Computing, Deep Learning, Algorithms, Databases, Speech Processing