Chaitanya Bapat

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Experience

Meta [formerly Facebook] London, **UK**
Senior Software Engineer *Jul 2021 - Present*

- Leading a team of 5, junior and mid-level SWEs, on building a live-chat product which aims to resolve account access issues of advertisers, creators & high-value user segments on Facebook & Instagram
- Optimising live-chat funnel through improved CTR & reduced drop rate thereby unblocking **$1.5 million revenue per year**
- Leveraging bi-directional machine translation model to expand live-chat coverage to over 50 high-frequency languages thereby increasing Serviceable Obtainable Market from **15%** to **56%**
- Drove the launch for additional account recovery methods for locked out customers on Android & iOS resulting in a **11x** jump from a previous **80 / day** to **1000 recovered accounts / day**

Amazon Web Services Palo Alto, **USA**
Senior Software Development Engineer *July 2019 – July 2021*

- Launched Sagemaker Distributed Data Parallel library, based on a proprietary, optimized gradient averaging technique, for faster distributed training on AWS infrastructure [*AWS re:Invent 2020 Launch*]
- Elected as a Committer to Apache MXNet, an open-source deep learning framework [*Announcement*]
- Built MXNet CI-bot that lead to **$240k** annual savings for the group [*Design*][*Demo*]
- Enabled distributed model training with Apache MXNet and Horovod on AWS Sagemaker that reduced **26 hour** end-to-end training time to **8 hours** (≈**70%**). [*AWS ML Blog 1*] [*AWS ML Blog 2*]
- Developed a 2D Transpose kernel with **47%** speedup by optimizing L1 cache utilization and vectorized operations

Deep Learning Engineer *Sept 2018 – Dec 2018*

- Designed and implemented new user-critical APIs - Debug operators, Constant initializer for NDArray
- Developed a random integer sampling operator that gave **17x** speed-up over the equivalent Numpy library method

Verizon Connect Atlanta, **USA**
Software Engineer *May 2018 – Aug 2018*

- Built an ensemble model for Predictive Maintenance of automobiles based on Diagnostic Test Codes (DTC)
- LSTM-based model ingested time-series data and performed well with **79.2%** precision
- Conducted a Proof-of-Concept on **Device-to-Blockchain**, a novel concept of storing vehicle data directly onto the blockchain without 3rd Party involvement
- Studied and intiated thought leadership within the group on blockchain frameworks - **Hyperledger Fabric** and **Sawtooth**
- Developed microservices in order to assist ongoing efforts of migrating legacy monolithic architecture to distributed microservices architecture on Amazon Web Services
- Designed dashboards after performing log data analysis of application performance metrics using Splunk

Georgia Insitute of Technology Atlanta, **USA**
Graduate Research Assistant *Aug 2017 – May 2019*

- Built a decentralized app (dApp) for academic credential management using Solidity on Ethereum blockchain *arXiv*
- Researched on the best practices for Massive Online Open Courses (Udacity and Coursera) and Vertically Integrated Programs
- Analyzed and evaluated the performance of Online platforms vs On-Campus for CS1201 course

Nexchanges Marketplace Mumbai, **India**
Data Scientist *May 2016 – Dec 2016*

- Spearheaded the team completing 10 Web Scrapers hosted on Scrapy Cloud which have extracted more than **10 million** data points from 7 online real-estate platforms across a period of 2 months
- Implemented spatio-temporal clustering for predicting real-estate prices for 5 Mumbai zones using Apache Spark and MLlib
- Designed the Dashboards that provided insights on Key Performance Indicator of the business, and helped quantify the sales revenue growth of **20% Month over Month**

Quickwork Technologies Mumbai, **India**
Software Developer *May 2015 – May 2016*

- Developed mobile application using Java and TeamChat Client SDK based on messenger bots where all transactions and interacts are fortified by Natural Language Processing and Artificial Intelligence
- Handled the backend of the entire application in MongoDB, a NoSQL document-oriented database

Education

Georgia Institute of Technology GPA: **3.63/4** Atlanta, **USA**
Masters in Computer Science, Machine Learning *Aug. 2017 – May 2019*

University of Mumbai CGPA: **8.41/10** Mumbai, **India**
Bachelor of Engineering in Computers *Aug. 2013 – May 2017*

Research Publications

Skin Image Recognition using RGB, HSV, YCbCr models | *journal* | *Slides* | *arXiv* *2017*

- Designed an algorithm for identifying skin pixel from non-skin pixel using the RGB, HSV, YCbCr models
- Applied Linear Regression and Bayesian Classifiers for carrying out Segmentation of Skin Images
- Presented the paper at **International Conference on Communication and Signal Processing (ICCASP)**
- Published in **Atlantis Press, Springer Nature Journal**, part of Advances in Intelligent Systems Research

Smart Locks Re-engineered: Securing IoT devices using Cryptography and Steganography | *arXiv* *2017*

- Designed the Smart Lock using the Raspberry Pi 3 Model B, capable of ensuring secure locking system
- Leveraged BLE protocol to mitigate the vulnerabilities like Man-in-the-Middle attack

Blockchain for Academic Credentials | *arXiv* *2020*

- Discovered a novel application of blockchain for the purpose of storing, verifying & validating academic credentials
- Built a decentralized application dApp based on BlockCerts, an open-source MIT project
- Collaborated with 6 universities across Paris, Austin, California & Atlanta to establish a consortiua for granting course completion certificates and related cryptography degrees

Awards

MIT Sloan Sports Analytics Conference Winner | *Demo* | *Slides* | *News coverage* *Mar 2019*

- Introduced a novel concept, WTA Fan Coin, a digital token for Women Tennis Association to improve audience engagement
- Launched WTA Fan app that leverages the virtual currency to trade players
- Codified power-packed features such as stock-market like "dynamic player pricing", player profile, merchandise integration
- Won the MIT Sloan Sports Analytics Conference Hackathon for the novel idea & implementation of the WTA Fan app

HackGSU — State Farm Insurance Winner | *Demo* | *Code* | *Post* *Mar 2018*

- Built a Unity-based smartphone app to apply for StateFarm Insurance
- Leveraged Augmented Reality to overlay fire/water hazards while conducting house survey as part of insurance application
- Won the Georgia State University Hackathon amongst 229 other participants

CodeLeidoscope — Germin8 Hackathon Winner | *Code* | *Slides* *Jun 2016*

- Ideated & designed a Social Network based Solution to Environmental problems grappling the society
- Developed an Android application for users to report issues and an Administration dashboard for issue assignment and resolution
- Won the Germin8 Hackathon amongst ≈50 other participants

Projects

Deep Learning Paramedic Assistant for Radiologists | *Demo* *Jan 2019 – Apr 2019*

- Devised a custom data loader by filtering out lateral images from CheXpert dataset
- Formulated a custom model evaluation metric that uses a compound class-based accuracy score
- Identified best performing model with 0.8125 average ROC AUC score using ResNet followed by Fully Convolution Network

Data Analysis of Meetup.com | *Demo* *Feb 2018 – May 2018*

- Built a dashboard that enables an event organizer figure out when, where & how to conduct an event based on a step-by-step guide
- Visualized Meetup.com data via Tableau that simplifies understanding of the estimated event footfall based on multiple parameters - location, duration, time & type of event

Personalized Hospital Patient Newsletter | *Slides* *Feb 2018 – May 2018*

- FHIR-based Mail service that updates the next-of-kin of patients on a daily basis about diagnosis in an interactive manner.
- Automated newsletter which updates frequently by capturing dynamic flow of events through FHIR-RESTful endpoint
- Mail is understandable for layman by leveraging NLP Clinical Ontology of MedlinePlus

Rapport – Interactive, Patient-centered Radiology Reports | *Demo* *Aug 2017 – Dec 2017*

- Annotated reports with Lay Language definitions using Natural Language Processing (Apache cTAKES)
- Visualized 3D human body models using BioDigital API for explaining complex anatomical concepts

Intelligent Question Routing Algorithm for StackOverflow | *Slides* *Oct 2017 – Dec 2017*

- Proposed a novel question routing algorithm based on Random Forest classifier & K-means clustering
- Deconstructed & optimised the inventive structure on StackOverflow, a question-answering platform

Fantasy Premier League Data Analysis | *Slides* | *Dataset* *Dec 2016 – Jun 2017*

- Extracted data from Fantasy Premier League, platform for pundits / enthusiasts to make their own "Dream team" - collect points for every gameweek based on how PL players perform in the real game
- Contributed dataset to Kaggle which received **20,093** views, **1518** downloads, **13** unique contributors, **6** notebooks

Technical Skills

- **Programming Languages**: Python, Hacklang, PHP, C/C++, Java, JavaScript, HTML, CSS, R
- **Databases**: SQL (Postgres, MySQL), PrestoDB, Apache Hive, MongoDB, DynamoDB, Cassandra
- **Web Frameworks**: AngularJS, Django, CodeIgniter
- **Deep Learning Frameworks**: Apache MXNet, Tensorflow, PyTorch
- **Big Data Frameworks**: Apache Spark, Apache Hadoop
- **Blockchain Frameworks**: Solidity, Ethereum, Hyperledger Fabric & Sawtooth
- **Developer Tools**: Git, Docker, Jenkins, Metamask
- **Libraries**: pandas, NumPy, Matplotlib, D3.js, Tableau

Certification

- **International Diploma Spanish** language: FIDESCU A2 - **86%**, B1 - **83.24%**
- **Deep Learning specialization**: 5-part course by Deeplearning.ai on Coursera *Verifiable link*
- **Entrepreneurship** by Guy Kawasaki on LinkedIn *Verifiable link*

Leadership

Secretary General — Sardar Patel Model United Nations *Dec 2015*

Secretary — Computer Society of India, Sardar Patel Institute of Technology *2015-2016*

Managing Editor — SPark, Sardar Patel Institute of Technology *2015-2016*

Vice President — Rotaract Club Mumbai Parleshwar *2014-2015*

Volunteering

Education Support Volunteer — Make a Difference *2015-2016*

- Taught Mathematics to 6th-grade students across 8 months at St.Catherine's High School Mumbai
- Completed 45+ hours of teaching and enabled 20% increase in their academic score.

Teacher — Abhyudaya, SPJIMR *2015-2016*

- Taught English & Mathematics to students from grade 6 to grade 10