SATYA DEV NTV

Email:tvsatyadev@gmail.com Github:SatyadevNtv

SUMMARY I am a Machine Learning Researcher working in the areas of Optimization, Domain Adaptation, Deep Learning etc. Prior to this, I worked (3+ years) on design and development of large scale IoT solutions, which includes the entire pipeline from OS on IoT nodes to DB design and analytics in the cloud.

EDUCATION

Indian Institute of Technology, Guwahati 2012 - 2016
Bachelor of Technology in Electronics and Electrical Engineering
B.Tech Project: Discrete Cosine Transform using Redundant arithmetic
Advisor: Dr. Shaik Rafi Ahmed.

PUBLICATIONS / CONTRIBUTIONS

- B. Mishra, **N T V Satya Dev**, H. Kasai, and P. Jawanpuria. *Manifold optimization for optimal transport*, arXiv preprint arXiv:2103.00902, 2021.
- Pratik Jawanpuria, **N T V Satya Dev**, Bamdev Mishra. *Efficient robust optimal transport: formulations and algorithms*, arXiv preprint arXiv:2010.11852, 2020.
- P. Jawanpuria, **N T V Satya Dev**, A. Kunchukuttan, and B. Mishra. Learning Geometric Word Meta-Embeddings. In *Proceedings of the 5th Workshop on Representation Learning for NLP (RepL4NLP-2020)*, ACL 2020 Workshop.
- Contributed *GeoIMC* algorithm to Microsoft's Recommenders repo.

EXPERIENCE

Machine Learning Engineer, Vayve-Technologies Pvt.Ltd Sept 2019- Present
Working on Deep Learning based solutions for Computer Vision tasks.

Poject Manager, Vayve-Technologies Pvt.Ltd March 2020 - Aug 2020
Vehicle Tracking system: Design and develop a generic IoT solution, with a prototypical application in vehicle tracking system. We used Kafka as the broker and PostgreSQL as our event store. Developed several features such as, alerts based on geofence, SOS, live monitoring of device etc. We also worked on high precision GPS based on RTKLIB and path compression algorithms for GPS data.

Lead Software Engineer, Vayve-Technologies Pvt.Ltd Sept 2016 - Feb 2020
Project Manager: Dr. Saurabh Mehta

- Design an end to end IoT system for *BARC* (Broadcast and Research Council of India) that facilitates the collection of TV viewership information across India. The aim was to develop a system that can scale upto a million of these IoT nodes and aid the client's internal real-time metric analysis. As part of this, I have designed and developed multiple modules varying from software in IoT devices (meters, remotes) to cloud infrastructure of the system.
- **Operating system**: We developed an embedded OS based on *gentoo* (a linux distro) for the IoT nodes and designed it to be extensible via OTA updates. We built several software modules to interface with hardware such as, GSM modem, Power controller, LED displays etc. We also developed a reliable testing pipeline using *raspbian* to facilitate manufacturing and servicing of these IoT devices.
- **Cloud**: Developed an efficient and fault-tolerant cloud (device $\leftrightarrow$ worker) communication system for real-time event collection into PostgreSQL-DB. We implemented a broker-less system by customizing NATS to achieve this. We also built a software module using *SSH* protocol to debug any IoT device (Which is generally under the NAT of service provider) in the field.
- **DB and Client Dashboard Services**: We designed and developed various schemas, tables and DB functions to efficiently assist various challenges such as asset management, generating aggregates over this big event store etc. As part of this, we also
  - Built a software module to derive and track location of these IoT devices using Triangulation over cell tower information, and outlier detection via K-Means algorithm.
  - Developed a distributed processing module in *Python* that can efficiently scale horizontally and generate TV audience measurement reports over data sets on the scale of $\approx$ 5,000 events/device.
- **Ops**: We developed a tool to automate the deployement lifecycle of the entire system. Various features such as cluster/machine management, DB backup and restore, certificate generation etc were embedded as the first class features in this tool.
- Received a certificate of appreciation from *BARC* for the developed system.

Software Engineer, Service Lee Technologies Pvt.Ltd June-Aug 2016
Project Manager: Mr. Satish Suggala
Analytics Dashboard: Designed and developed a pipelined infrastructure in MongoDB and MySQL to generate real-time metrics such as number of registered consumers, live users, requests placed etc. Created auto-refreshing Graphing Web-UI in *RiotJS* and APIs in *NodeJS* to serve these metrics.

References available on request.

Developer Intern, Groctech Solutions Pvt.Ltd May-June 2015

Project Manager: Mr. Rahul Kumar

Introduced an option for Sharing item carts among the users. Architected the system to support synchronization of offline changes, support for multiple device usage etc. to improve UX.

PROJECTS

B.Tech project Jul 2015-May 2016

Advisor: Dr. Shaik Rafi Ahmed

We developed an efficient Discrete Cosine Transform algorithm using redundant arthmetic on FPGA architecture. Xilinx was used for testing the efficiency, latency and design parameters.

Braille Printer Sept-Dec 2015

Advisor: Dr. Suresh Sundaram

A Visual Guiding System for blind people that can convert text in an image to machine readable data and print them in Braille. Maximum Correlation of data is used as OCR technique, and is interfaced with Arduino to signal the motors and print the corresponding Braille pattern.

SCHOLASTIC ACHIEVEMENTS

- Secured All India Rank 1907 (99.602%) in IIT-JEE 2012.
- Secured 3rd position in district level for Ramanujan Mathematics Olympiad (RMO) that included all the competitive schools in Andhra Pradesh.
- Among the top 300 that qualified for Indian National Astronomy Olympiad (INAO) in the year 2008-2009.

TECHNICAL SKILLS

- **Programming languages**: C, C++, GoLang, Bash, Python, plpgsql, 8085 Assembly Language
- **Databases**: PostgreSQL, SQLite, MySQL, MongoDB
- **Software Packages:** MULTISIM
- **Operating Systems**: Linux, Windows
- **Versioning tools**: Git
- **Web Frameworks**: Django, Flask.
- **ML Frameworks**: Pymanopt, Tensorflow, Keras.

POSITIONS OF RESPONSIBILITY

Transportation Head, Alcheringa Mar 2014 - Mar 2015

Was a part of PR and branding Team of the cultural fest. Managed the budget for overall transportation facilities. Planned and executed transportation for the artists, judges, participants and the Guwahati crowd by leading a team of 30 members.

References available on request.