

# Pratik Deoolwadikar

Software Engineer

✉ pratik.deoolwadikar@gmail.com

☎ +91 9769118579

🐙 github.com/pratikdk

## WORK EXPERIENCE

---

### Software Engineer, Netcore

Apr 2019 - Jan 2022

- Developed system services, API gateways, data pipelines and service layers.
- Built micro service orchestrator and REST API/services for Quinto.ai's bots.
- Refined ETL data pipelines using dataproc and bigquery.
- Developed novel cluster-parser algorithm to obtain custom clusters from time series data frames, crafted features using analytical queries on analytical db(vertica).
- Streamlined microservices using Kubernetes.
- Developed semantic text annotator utilizing knowledge graphs(wikidata, conceptnet etc), Language models, Meta searching and Information retrieval techniques to enrich raw text.
- Analyzed performance of attention based pretrained Encoder-Decoder Transformer language models like BERT, Universal Sentence Encoder etc and few Bidirectional and Markov approaches on various NLU, NLG applications like text generation.

### Software Engineer, NanoPrecise

Aug 2018 - Apr 2019

- Developed data streaming & processing pipelines utilizing AWS Kinesis, lambda, S3, Apache Kafka, Docker, along with MongoDB, PostgreSQL and Redis databases.
- Decomposed monolith backend architecture into a microservices-based solution.
- Developed compute pipeline for analytics, utilizing Multi-Processing and Virtualization.
- Developed REST APIs & maintained multi node Hadoop Spark clusters on AWS EMR.
- Contributed to health monitoring and fault detection codebase for industrial assets utilizing Signal Processing, Math modelling and Time series machine learning algorithms.
- Designed bootstrap algorithm for battery life estimation of sensors. Explored algorithm performance with changes to spatial positioning and intermittent historical utilization.

## PROJECTS

---

### Developed a Python Framework, Transformers Keras Dataloader

<https://git.io/Jt639>

- Enables generator based real-time data feed to Transformer models for downstream training, unlocking the capacity to handle bigger datasets and larger batch sizes.
- Provides support to utilize GPU and Multi-Processing for input processing and computation.
- Added support for custom layer pooling strategies to generate word/sentence input vectors.

### NES (game console) Emulator in C++

- Implemented NES console by emulating 8-bit 6502 CPU, 16-bit Address bus, RAM(2KB), PPU (Picture Processing Unit), APU (Audio Processing Unit), Controller.
- Utilized SDL (and PixelEngine) for low level access to audio, controller (keyboard, mouse) and video(graphics hardware via OpenGL/Direct3D).
- Extensive exposure to registers, opcodes, addressing modes, flags, interrupts, name-table, sprites, rendering pipeline, assembly language, low level debugging etc.

## Utility Chrome plugins

- Packaged plugins with features to run background processes, process queries using third party API's(youtube, reddit etc) and persist user state in browser's local storage.

## Full-stack Webapps/clones

- Developed realtime web apps with features like notification, comment threads using React.js, Redux, Node.js, Express.js, MongoDB, Mongoose, Socket.io, Firebase.

## PyTorch implementations of Deep Learning algorithms

- Implemented raw DL algorithms like CNN, RNN, LSTM, Encoder-Decoder, etc in PyTorch.

## Transliteration using Encoder-Decoder Attention model and R-CNN

- Pytorch implementation of Encoder-Decoder Attention model pipeline to transliterate text from source(Hindi) to target(English) language script.

## Neural Relation Extraction using pretrained Language model

- Semantic relation extraction from documents, utilizing language model for obtaining word/phrase representations & downstream classifier to map entity pair similarity to all relations.

## Finetuning Transformer Language models

- Finetune pretrained parameters of Transformer Language models for text classification task, written a super-fast solution by employing techniques like gradient accumulation, dynamic padding, smart batching and mixed precision.

## Multi-Armed Bandit Problem

- Studied various reinforcement learning approaches of exploration and exploitation to solve K-armed bandit problem. (based on Simulation, Dynamic Programming, etc)

## Human Activity Recognition, LSTM on TensorFlow Android

- Realtime activity prediction from continuous spatial data of Accelerometer on Android, to classify amongst six different human activities.

## Audience Segmentation, Graph Neural Network

- Segment audiences by categorizing complex relationships using GNN, trained on engineered features from email corpus.

## Behavior Cloning for Autonomous Driving, Convolutional Neural Network

- Used CNN to predict steering angle from augmented first person images of road & scene to drive a car in the simulator, as a part of Udacity Self Driving Car nanodegree.

# SKILLS

---

**Programming Languages:** Java, JavaScript, Python, C, C++, PHP, SQL, HTML

**Backend:** Spring Framework, Node JS, Express JS, Flask, Spring Boot, Servlets

**Databases/Storages:** MongoDB, Cassandra, MySQL, PostgreSQL, Vertica DB, AWS S3, HBase, Redis

**Web/Data Frameworks:** Spring MVC, React JS, Redux, Docker, Kubernetes, Apache Spark, Kinesis, Kafka, Zookeeper, RabbitMQ, EC2, Hadoop, PySpark, JSP, JPA, Hibernate

**ML/DL libraries:** PyTorch, TensorFlow, Keras, SparkNLP, OpenCV, Transformers

**Softwares/Tools:** Unity 3D, Cinema 4D, WinDbg, Photoshop, Blender 3D

## EDUCATION

---

### **Bachelor of Engineering, Computer Engineering**

Aug 2018

D.T.E University of Mumbai, India

### **Diploma, Mechanical Engineering**

Jun 2015

Maharashtra State Board of Technical Education, Mumbai, India

## CERTIFICATION

---

### **Machine Learning Engineer, Udacity**

2018

- Hands on projects using Machine Learning, Deep Learning, Reinforcement Learning.
- Elementary projects from NLP, Computer Vision/Image Processing etc.
- Exposure to ML/DL frameworks like Tensorflow, Keras, Pytorch etc.

### **Android Developer Nanodegree, Udacity**

2018

- Extensively covered Advanced Android Architecture components, principles.
- Developed Apps using core API features, Hardware components, sensors and third-party Frameworks in Java.

## AWARDS

---

### **Smart India Hackathon 2017**

Awarded by:

- Ministry of Road Transport and Highways, Government of India.
- Persistent Systems Ltd.

## LINKS

---

### **Github**

<https://github.com/pratikdk>

### **Website**

<https://pratikdk.github.io>

### **LinkedIn**

<https://linkedin.com/in/pratikdeoolwadikar>