Pratik Deoolwadikar

Software Engineer

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WORK EXPERIENCE

Software Engineer - Backend & Data Platform, Netcore

Apr 2019 - Jan 2023

- Designed & developed RESTful APIs, backend service layers and data pipelines.
- Built scalable microservices for Quinto.ai's bots to run in Docker containers.
- Added multi-threading support for low-latency, high-volume, distributed consuming services.
- Client side load balancing, service discovery using Spring and Kubernetes.
- Developed data retrieval & storage services to retrieve data from third party integrations.
- Asynchronous pub-sub process communication using message queues (Kafka).
- Used gateway for authentication, logging, archiving and request aggregation.
- Designed a data parser algorithm to obtain custom clusters from time series data.
- Designed text-annotator to enrich raw text using knowledge graph & language model.
- Wrote containerized services to utilize transformer language models for text generation.
- Design, develop ETL pipelines to transfer data from multiple OLTP (transactional) to OLAP (warehouse) databases, exposed API for analytics.

Software Engineer - Backend & Data Platform, NanoPrecise

Aug 2018 - Apr 2019

- Designed & Developed data streaming & processing pipelines utilizing AWS Kinesis, lambda, S3, Apache Kafka, Docker, along with MongoDB, PostgreSQL and Redis databases.
- Decomposed monolith backend into isolated microservices based solution.
- Developed compute pipeline for analytics, utilizing multi-processing & docker containers.
- Designed REST APIs & maintained multi node Spark clusters on AWS EMR.
- Wrote health monitoring and fault detection codebase for industrial assets utilizing Signal Processing, Math modeling and Time series Machine learning algorithms.
- Designed algorithm for battery life estimation of sensors(micro-controllers). Explored algorithm performance with changes to spatial positioning & intermittent sensor operation.

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 implemention 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 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 & Kalman filter 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 Language: Java, C++, C, Python, JavaScript, SQL, PHP, HTML

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

Platform: Java SE(Java core), Java EE, AWS, GCP

Database/Storage: MongoDB, Cassandra, MySQL, PostgreSQL, Vertica DB, S3, Redis

Web/Data: Spring MVC, Spring Cloud, Docker, Kubernetes, Apache Spark, Apache Kafka, Zookeeper, RabbitMQ, Kinesis, Hadoop, JSP, JPA, Hibernate

Other libraries: PyTorch, TensorFlow, Keras, SparkNLP, OpenCV

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