Yang SONG

Aptiv | Senior Algorithm Developer

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SUMMARY

- Experienced developing, testing, and troubleshooting complex production software using C++, Python, Java, Scala.
- Familiar with relational/NoSQL databases (MySQL, Cassandra, Redis) and cloud platforms (AWS, Hadoop, Spark).
- Experienced with DevOps & CI/CD tools : Docker, Jenkins, Git, CircleCI.
- [3.5 years] worked with distributed systems and web applications that impact millions of customers.
- [2.5 years] worked with perception, planning, and prediction algorithms for the autonomous vehicles.
- Collaborative spirit. Can-do attitude. Inquisitive mind.

SKILLS

Project Management	JIRA, Polarion, Maven, Bazel, CMake, Capistrano, Yarn, Conan
AWS Experience	EC2, S3, SageMaker, SWF, SQS
Programming	**C++**, **Python**, **Java**, Scala, Ruby, Javascript
Frameworks	**ROS**, Spark, Play Framework, Rails, EmberJS
Databases	MySQL, Cassandra, Hive, Redis
Unit Test	GTest, JUnit, Rspec
DevOps	Git, Jenkins, Docker, DotCI, CircleCI, Gitlab CI/CD

EXPERIENCE

Jan 2022 – Jan 2021 | **Aptiv | Senior Algorithm Developer, WUPPERTAL, Germany**

- Main algorithm developer of the radar processing library customized for **Motional**'s L4 AV Systems.
- Review the software requirements and specifications, draft the software detailed design, unit tests and regression tests.
- Support product owner to prioritize JIRA tasks in spring planning and refinement meetings.
- Drive algorithm design, implementation and optimization of the MRR radar library : radial velocity dealiasing, clustering, reflection detection (Python, Sklearn, C++) from proof to concept phase to production.
- Lead the communication with clients and define performance metrics to measure range rate, azimuth and reflection algorithms to finalize the software requirements and specifications.
- [Ownership] Designed evaluation pipeline for radar processing library and implemented Python-based regression tests using ground truth data.
- [Achievements] Delivered solution performance : 90.25% range rate unfolding accuracy, 80% azimuth unfolding accuracy, 86.75% reflection detection accuracy.

C++17 | Python | Docker | Bazel | Conan | GTest | UML | Jenkins | Gitlab | Scrum | MagicDraw | Polarion | JIRA

Dec 2020 – Aug 2019 | **Aptiv | Senior Algorithm Developer, WUPPERTAL, Germany**

- Drove lane change prediction feature functions design in the Advanced Driver Assistant System (ADAS) for **PSA**.
- Collaborated with product owner to initiate and finalize use cases and testing scenarios in terms of EuroNCAP.
- Collected road testing data for the lane change model and created labeling pipeline to generate the ground truth from radar tracker and camera data (Python, OpenCV).
- Designed performance metrics and implemented data pipeline to evaluate performance of the prediction module offline (Python, Sklearn).
- Contributed to the API Design (OOD) of the system error handling module (UML, C++14, ROS) and delivered with ASPICE development life cycle.

C++14 | ROS | Python | GTest | UML | Jenkins | AUTOSAR | Git | ASPICE | Enterprise Architect | Polarion | Matlab

May 2019 – May 2018 | **Groupon | Software Engineer, DUBLIN, Ireland**

- Led the GDPR project for the Customer Relationship Management (CRM) system to safely consolidate and migrate all EMEA consumer data in different databases : MySQL and Cassandra.
- Developed REST back-end API on Rails to interact with front-end features (EmberJS) for the EMEA merchandise platform (Test-Driven Development).
- Mentored the intern to implement and deliver the system monitoring metrics using Splunk.

Rails | RSpec | Capistrano | EmberJS | MySQL | Docker | Jenkins | DotCI | Cassandra | Nagios

May 2018 – Feb 2016 | **Groupon | Software Engineer, Seattle, WA, USA**

- Developed features for a core REST back-end service in CRM system using Java to send email campaigns and mobile notifications to over 6M daily customer engagement.
- Optimized the continuous deployment process from using shell scripts to Capistrano.
- Contributed to the back-end job migration from Hive query to Spark and achieve 10x performance improvement on the on-premises cloud architecture, by collaborating with the Data Engineering team.
- Optimized the system architecture, cost, and performance by submitting Spark jobs to YARN directly (original system managed Hive queries with AWS SWF and SQS).
- [Ownership] Optimized and migrated a Hive SQL-based batch data pipeline to Spark 2.4 on Hadoop.
- [Ownership] Designed and optimized the data pipeline over Hadoop and Cassandra clusters using Spark.

Accomplishments :

- The batch data pipeline takes 50+% less runtime and 80+% less storage to pull data from the Enterprise Data Warehouse (EDW) and write to Hadoop.
- Speed up the data writing process (2x faster) from Hadoop to Cassandra clusters by tuning up throttles without impacting the APIs' SLA.

`Java8 (Play)` `Scala` `Spark` `Maven` `Yarn` `Capistrano` `Splunk` `Jenkins` `Docker` `DotCI` `MySQL` `Hadoop` `Cassandra` `Redis` `Hive` `Swagger` `AWS`

Aug 2015 – May 2015 | **Auro Robotics (YC S15) | Motion Planning Engineer Intern, Sunnyvale, CA, USA**

- Constructed an operational electric self-driving shuttle from scratch with 3 founders and 4 engineers in three months (seed round investment : $120K).
- Implemented a waypoint-following path planner using GPS data and a RRT* path planner using LiDAR data with ROS (C++/Python).
- Compared and optimized performance of different local planners (A∗, RRT∗) by conducting ROS simulations and road tests.

Accomplishment : Tech media's spotlight at YC Demo Day Summer 2015 & receive $2.1M investment.

`C++11` `ROS` `CMake` `GTest` `OMPL` `Boost` `Jenkins`

Education

2015 Ph.D. Computer Science, University of South Carolina, Columbia, SC, USA
2009 M.S. Electrical Engineering, University of New Mexico, Albuquerque, NM, USA
2007 B.S. Electrical Engineering, China University of Geosciences, Wuhan, China