Ram Kumar Kanda Kumar

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Chennai, TN, India.

Passionate and dedicated professional with **19yrs 3mos** of experience (including **2yrs 4mos** *of experience in onsite,* **USA**) as a polyglot developer, skilled in Java, Python, Embedded C, React, Flutter, IoT, TinyML, AWS services. Experienced in containerization processes, backend and frontend development, embedded systems, machine learning, cloud solutions, and data engineering. Skilled in delivering versatile and robust software solutions while adhering to best practices in software development processes, including design, implementation, and deployment.

Achievement

Bluetooth with Close Range LiFi

Submitted on Oct 2024

Patent Pending (PA-200-0382)

- Mobile credentials, predominantly using Bluetooth communication between Device and Reader. To verify the Device proximity, Reader uses signal strength, which is not accurate, nor user friendly. To solve this problem, we can use Close Range LiFi to verify the Device proximity intuitively like NFC.

Professional Experience

Senior Software Lead Engineer
HID Global, INDIA.

Oct 2021 – Active

- Implemented a dynamic windowing and stride technique on devices for real-time stream data, optimizing data processing and improving inference accuracy.
- Contributing to the Gesture Recognition application across all aspects of the machine learning process, including project setup, data collection, preprocessing, model training, and optimization. Additionally, working on integrating the solution for real-time gesture recognition in mobile devices.
- Implemented Poetry for build and dependency management in a Python-based AI and TinyML project.
- Migrated the push notification system to the new version of authentication in Firebase Cloud Messaging (FCM), enhancing security, delivery efficiency, and reliability for mobile devices. Testing was performed in-house using steps shared with the SDK team, reducing the integrator's dependency for functionality validation.
- Understood the Aliro specification, a communication protocol and credential for seamless interoperability between mobile devices, wearables, and access control readers. Implemented the specification using a Raspberry Pi with a PN532 NFC module and a mobile device.
- Designed a cost-effective data ingestion workflow using AWS ECS and Event Bridge, where ECS tasks are triggered by events. After job completion, ECS instances are stopped to minimize costs.
- Developed a POC to implement OAuth2 PKCE flow for custom applications in both desktop (Windows) and web (React), assisting the SDI team with OAuth2 integration using a sample React application.
- Created a custom container image for DCBS Java and Python applications, ensuring image compliance with no vulnerabilities as per the Aquasec report (supporting ARM64 processors and Graviton migration) for use across DCBS.
- Implemented federated authentication with ASSA ABLOY AD (Azure) via AWS Cognito, enabling custom DCBS-level authorization
- Solution to migrate data ingestion from java application to AWS Glue (Apache SPARK wrapper)
- Understand and implemented an event pipeline with AWS Kinesis and AWS Firehose, exposed as a Rest API endpoint used by Mobile SDK (Android & IOS) to push real time events.
- Hosted a self-managed Grafana instance to visualize events stored in the OpenSearch database, streamlining event monitoring and enabling efficient, customizable analysis. Implemented Single Sign-On (SSO) for Grafana, ensuring seamless authentication and access management across integrated systems.
- Developed an event pipeline to pull historic and daily events from Mixpanel to the DCBS Datalake, activating data pulls based on a delta threshold. This solution reduces unnecessary pulls, optimizing AWS costs.
- Developed a trace pipeline with OpenTelemetry and OpenSearch, implementing distributed tracing for REST services and real-time event tracking on Android (Java) and iOS (Swift).

  - `Python_3.12.7` ● `plotly_5.24.1` ● `scipy_1.4.1` ● `scikit-learn_1.5.2`
  - `ydata-profiling_4.12.0` ● `pygwalker_0.4.9.13` ● `seaborn_0.13.2` ● `tensorflow_2.17.0`
  - `pyyaml_6.0.2` ● `poetry_1.8.4`

  - `Raspberry Pi` ● `PN532`~NFC Module ● `Arduino_NANO_33_BLE_Sense`

Fullstack Developer   **Dec 2018 – Sep 2021**
Freelancer, INDIA.

■ Designed and implemented a java agent application with desktop user interface; using Spring Boot as agent with PIXELMED api for DICOM parser and upload the archived images to AWS S3, Electron as desktop wrapper for AngularJS application with DICOM Web Viewer an open source DICOM viewer and interaction between them using STOMP over Websocket.

■ Designed and developed a mobile portal for subscription management along with user checked in functionality using finger scanner IOT with Hive MQTT javascript API communication.

■ Designed and developed Monitoring system with R307 finger scanner module using Node MCU(ESP-12E) and communication via Hive MQTT.

■ Designed and implemented order management application with both desktop and web user interface, using Firebase authentication, Firebase Realtime database and AngularJS with RXJS api.

■ Designed and implemented a portal for legacy components, using Spring Boot as a server with Spring OAuth and AngularJS web application with JMOL web viewer

- `spring_boot_2.2.1` ● `spring_5.2.1` ● `aws_java_sdk_s3` ● `commons_compress_1.20`
- `pixelmed_1.2.0`$^{\sim DICOM\ Parser}$

- `angular_10.2.5` ● `express_4.17.1` ● `express_http_proxy_1.6.2` ● `rxjs_6.6.7`
- `stompjs_2.3.3` ● `socketjs_client_1.5.1` ● `typescript_4.0.2` ● `dwv_0.29.0`$^{\sim DICOM\ Web\ Viewer}$
- `jmol_14.31.2`$^{\sim Molecule\ Viewer}$ ● `firebase_8.2.1` ● `mqtt_4.0.0`

- `Arduino_ide_1.8.15` ● `R307`$^{\sim Finger\ Sensor}$ ● `ESP12E`$^{\sim WIFI\ Module}$

Software Lead Engineer   **Apr 2017 – Dec 2018**
HID Global, INDIA.

■ Developed SDI admin UI, with AngularJS 6.0 and Typescript 3.1.

■ Integrated Membrane proxy 4.4 with SDI services with HTTPS support.

■ Created Typescript reusable components and services to consume REST API's using component-based architecture provided by AngularJS

■ Experience in using Chrome Developer Tools and Firebug for debugging and troubleshooting the code.

■ Designed and Developed SOAP and RESTful services in SDS server side using façade, BO, DAO and other design patterns.

■ Created Unit test cases Using Mockito and tested the module accordingly and delivered the releases on time with high quality. Also improved the code quality by reviewing team member's code and giving guidance to them.

■ Setup and configured in-house Thales HSM and cloud Luna HSM with Key fragmentation.

Technology Specialist   **Aug 2015 – Mar 2017**
Cognizant Technology Solutions, INDIA.

■ Using amazon SDK 1.11.36 API, implemented a util to assign a static IP for a public IP and Map/UnMap the static IP with AWS ELB.

■ Using AWS web interface, created an Amazon RDS Postgres server.

■ Using Cloud Foundry 2.19 API, implemented login, list all services, service instances, apps and create routes, deploy apps, bind apps with service instance, unbind apps with service instance etc.

■ Designed Service Broker framework using Spring Boot 1.3.7 with an existing service broker 2.10 API (spring-cloud-cloudfoundry-service-broker:1.0.0), which makes the implementation easy and maintainable for different resources and different plans.

■ Configured spring boot application with vault to fetch application properties from secured vault server (spring-cloud-vault-starter-config:1.0.0).

■ Knowledge on BOSH releases, orchestration of BOSH deployment with different releases and consumed BOSH API 1.0.

■ Designed and developed a reverse script for auto validating existing mongo clusters using mongo java driver 3.2.2.

■ Designed and rewrote a docker based Mongo DB cluster setup using Spring, Jersey REST API with Jetty embedded server.

Associate   **Apr 2013 – Jul 2015**
Cognizant Technology Solutions, USA.

■ Implemented print functionality, using Apache Velocity for the dynamic template printing in both LASER and ZEBRA printers. I understood both architecture of service invocation for LASER and CPCL format for ZEBRA in GIF in short period

■ Implemented the functionality, with a cluster of Enterprise Integrated Patterns using integration framework Apache Camel 2.8.0.

■ Implemented custom request binder for CXFRS component, to achieve a unified port for multiple services. (Implementation is not required for Apache Camel 2.11 or above).

■ Coordinate with the offshore team on the deliverables at the various stages of the SDLC.

Associate   **Apr 2011 – Mar 2013**
Cognizant Technology Solutions, INDIA.

■ Proof of Concept on implementing EIP used in different modules in CSOS to get initial sign off to use Apache Camel.

■ Override the Apache Camel's JMS component with DynamicDestinationResolver, for IBM MQ. To solve the header junk problem while communicating with non-JMS messaging service (IBM MQ) from JMS messaging service (Active MQ).

■ Integrated both pagination and sorter for given table using TableSorter framework with jQuery 1.6.3

■ Developed a framework for report generation, using XML, XSLT and AJAX from jQuery.

■ Integrated other subsystems through JMS 1.1, IBM MQ, XML and JAXB 2.0.

Programmer Analyst   **Oct 2009 – Mar 2011**
Cognizant Technology Solutions, INDIA.

■ Developed an Eclipse plugin with PMD and Checkstyle static analyser.

■ As a Quality champion, monitor code base periodically and send reports with various analyser tools like PMD 4.2.5, Checkstyle 5.4, Javancss, LOC and Rational Software Analyser (RSA 7.5).

■ Involved in defect analysis and fixing of production defects. (Analysed race condition with hashmap).

■ Reviewed and re-factored existing code based on Rational Software Analyser (RSA) report generated using RSA 7.5.

Software Engineer   **Aug 2005 – Apr 2007**
Maples ESM, INDIA. Deputed to Tata Consultancy Services, INDIA

■ Implemented generic template to populate and merge PDFs (Ordinary & Acroform) using iText 2.0 and JAXP 1.5(SAX) APIs.

■ Designed file merging technique by storing Offset (start & end bytes) of each file merged.

■ Implemented Log4j 1.2 using XML Configuration to implement filter information.

■ Implemented persistence tier using iBatis 2.1 to invoke stored procedures and SQL statements in an Oracle 8.1.6 database

■ Configured Validator plugin with Struts 1.2 and developed customized validation

■ Implemented a generic job scheduling framework using Quartz 1.6

■ Implemented a customized RequestProcessor (Struts 1.2) to control validation process depending on user access rights

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Software Engineer   **Aug 2005 – Apr 2007**
Finix Info Solution, INDIA.

- As a developer participated in configuring servlets and developed Action Classes with corresponding Action Forms for various modules like User, Manager, Admin modules.
- Involved in designing and developing user interface screens using JSP tags.
- Configured Validator and Tiles plugins with Struts 1.2 and developed customized validation and reusable view components.
- Configured servlets in deployment descriptor and developed utility components.

Certificates

- Sun Certified Business Component Developer (SCBCD) for Java EE 5
- Sun Certified Programmer (SCJP) for Java 2 Platform, Standard Edition 1.5
- Oracle PL/SQL Developer Certified Associate (OCA) for Oracle 9i

Career Profile

Period	Designation, Organization & Projects	Timeline
Oct 2021 – Active	**Senior Lead Software Developer,** HID India Pvt Ltd.	
	Gesture Recognition (Twist & Go)	Nov 24 - Active
	Trusted Security Manager (TSM)	Sep 23 - Active
	Credential Management Systems (CMS)	Sep 23 - Active
	Data Services and Tools (DST)	Oct 21 - Aug 23
Jan 2019 – Sep 2021	**Fullstack Developer,** Freelancer.	
	DICOM Image Management	May 20 - Sep 21
	Subscription Management	May 20 - Sep 21
	Order & Route Management	Mar 20 - Sep 21
	Web Molecule	Jan 19 - Apr 20
Apr 2017 – Dec 2018	**Software Lead Engineer,** HID India Pvt Ltd.	
	SDI – Admin Tool	May 18 – Dec 18
	SDI (Secure Delivery Infrastructure)	Apr 17 – May 18
Aug 2015 – Mar 2017	**Technology Specialist,** Cognizant Technology Solutions India Pvt Ltd.	
	DEP (Digital Foundry)	Jul 15 – Mar 17
Apr 2013 – Jul 2015	**Associate,** Cognizant Technology Solutions U.S. Corporation.	
	GLS 2.0 International Gaps – Japan (Cognizant, USA)	Apr 13 – Jan 14
	GIF (Global Integration Framework) (Cognizant, USA)	Feb 14 – Jun 15
Oct 2009 – Mar 2013	**Associate,** Cognizant Technology Solutions India Pvt Ltd.	
	Controlled Substance Ordering System (CSOS)	Feb 12 – Mar 13
	WebMtracks (Sam's club Membership)	Oct 11 – Jan 12
	Pick up Today – PUT (.com Integration)	Mar 10 – Sep 11
	Task Management System - TMS	Oct 09 – Feb 10
May 2007 – Sep 2009	**Software Engineer,** Maples ESM Technologies Pvt Ltd.	
	BDSS - EZForms IAA - Acroform Conversion	Jul 09 – Sep 09
	BDSS - IVault	Mar 09 – Jun 09
	BDSS - EZForms Admin	Nov 08 – Feb 09
	BDSS - EZForms 529 Prefill	Jan 08 – Oct 08
	BDSS - EZForms IAA - Migration	May 07 – Dec 07
Sep 2005 – Apr 2007	**Software Engineer,** Finix Info Solution Pvt Ltd.	
	Project Management System	Mar 06 – Apr 07
	Job Portal for Headhunt India (HHI)	Sep 05 – Feb 06