NEBULA ALAM

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Senior Software Engineer | Sessional Academic | Inventor | Data Science Specialist

12 years of experience in building scalable software for the cloud and helping organisations build scalable processes, pipelines and platforms for maximising utilisation of their data and AI capabilities. My passion lies at the intersection of Software Engineering and Machine Learning.

Experienced Technical Lead with demonstrated capability in Software Development Lifecycle and Project Management, requirement analysis, distributed architecture design and full cycle of MLOps. A strong problem solver and engineer, with Open-Source contributions and experience in developing scalable, distributed, performant and resilient software for the cloud. A constant innovator and Inventor with 8 issued patents and 5 publications presented at world-leading conferences. Additionally, I mentor the next generation of Software Engineers at the Deakin University as a Sessional Academic.

KEY SKILLS SUMMARY

- Java, Python, Go, JavaScript, TypeScript

- Distributed system design, Machine Learning system design

- Object-Oriented Design (OOD), Event-driven architecture, Functional programming

- Cloud-native Architecture & Containerisation for Scalability & High Availability

- Software Testing: Unit, Integration and End-to-end Testing, Parameterised Testing

- ETL, data processing pipelines and workflow automation

- API specification: OpenAPI, GraphQL

- Software performance monitoring and usage analytics

- MLOps, DevOps pipelines and Code Management

- Open-Source software development

- Agile Software Development Life Cycle (SDLC) Management

- Project Leadership & Management, Client & Stakeholder management, Team Mentoring

TECHNICAL SKILLS

Languages	Java, Python, Go, JavaScript, TypeScript
Databases	SQL: MySQL, PostgreSQL, NoSQL: CouchDB, MongoDB, DynamoDB
Backend	Spring MVC, Google Guice, GraphQL, Log4j, Junit, Junit Quickcheck, Hamcrest, Querydsl, Python Flask, Gin, OpenAPI Specification + Swagger, Pytest, RabbitMQ, Node.js, AmazonSQS, Redis
DevOps	Docker, Kubernetes, Bamboo, Jenkins, GitHub Actions
ML / AI	Scikit-learn, Keras, Tensorflow, PyTorch, Watson Data Platform, Kubeflow, LangChain, RAG
Big Data	Apache Spark, Apache Hadoop
Software Engineering	Cloud-native & distributed Architecture, Microservices, Observability and Monitoring
Front-End	ReactJS, D3, Material-UI, OpenLayers, Cesium

EMPLOYMENT SUMMARY

Sessional Academic	Deakin University	March 2024 - Present
Senior Software Engineer	Atlassian	Sept 2021 – Dec 2024
Advisory Software Engineer	IBM Research, Australia	June 2020 – April 2021
Staff Software Engineer	IBM Research, Australia	Nov 2017 – June 2020
Software Engineer	IBM Research, Australia	Sept 2014 – Nov 2017
Research Software Intern	IBM Research, Australia	Aug 2012 – Sept 2014

EMPLOYMENT HISTORY

ATLASSIAN- JIRA SERVICE MANAGEMENT (JSM) [SEPT 2021 – DEC 2024]

Atlassian builds Work Management tools for services, projects, knowledge and source code so that business teams can better plan, organise, track, and manage their work. Jira Service Management is a service desk tool powered by Jira.

SENIOR SOFTWARE ENGINEER

- **Led Workflow Templates API development that resulted in 20% increase in weekly projects created and 17% increase in active users**
  - Developed Workflow Templates Fetcher Backend API for JSM admins to view templates and create new workflows quickly.
  - Collaborated with product, design and engineering teams to define requirements, API specification and architecture design. Implemented and delivered feature incrementally.
  - Implemented integration and end-to-end tests, reliability and performance monitoring, SLO monitoring and alerting, and upgraded API to paginated version.
  - Tools: Java, Google Guice, GraphQL, Hamcrest, Splunk, SignalFx, Junit, Log4j

- **End-to-End Testing Framework Improvements, reducing 40% noise in monitoring alerts**
  - Led a cross-organization initiative to reduce noisy alerts from E2E tests.
  - Used by all teams in JSM, 15 teams in other departments and 461 code usages across Atlassian by the end of first quarter.
  - Identified gap in testing framework, proposed a fix, improved and validated in a cross-team focus group. Recruited other developers across the organisation to help implement.
  - Published documentation and how-to guide
  - Tools: Golang, Typescript, Python, Gin, Swagger

- **Implemented Excluded approvers functionality for JSM Approvals, used by 13k-15k daily users; prevented 900 self-approvals per week in first quarter**
  - Developed backend and public APIs, implemented unit, integration and end-to-end testing
  - Updated 5 existing Jira Query Language (JQL) functions to filter excluded approvers, implementing complex SQL queries.
  - Increased JQL test coverage from 0% to 100% test coverage with parameterized testing.
  - Implemented performance and reliability SLO monitoring.
  - Tools: Java, Google Guice, Hamcrest, Splunk, JUnit

- **Feature Lead: In-Product Guidance Experiment** to evaluate if side panels with opinionated help articles can reduce churn, from design to implementation.
  - Managed end-to-end project delivery, including requirement analysis, risk mitigation, and technical design and sprint planning.
  - Led development with 2 developers and collaborated with Product, Design and Content writers to deliver the experiment in just 5 weeks.
  - Provided insights that stopped further investment in unhelpful side-panels.
  - Tools: Statsig, Databricks, React, TypeScript

- **Date Format Bug fix**
  - Fixed a critical date format bug potentially affecting 137,893 sites, resolving potential issues for 320 sites with high data volume.
  - Implemented zero-downtime database migration to standardize date formats.

- **Process Improvements**
  - Improved the end-to-end test deployment pipeline, reducing bottlenecks and increasing accountability. Established SDLC process across the department that reduced test deployment delays from several weeks to under 24 hours.
  - Led initiatives to create bug triage workflows for faster support engineer responses.
  - Organised workshops to establish team identity, rituals and guiding principles, increasing team performance.
  - Led brainstorming sessions on AI applications in JSM, leading to a hackathon-winning idea.

DEAKIN UNIVERSITY [MARCH 2024 – PRESENT]

A renowned university in Victoria, Australia; provides Graduate and Undergraduate Software Engineering students a chance to contribute to software projects deployed in production as part of their final year project.

SESSIONAL ACADEMIC – CAPSTONE MENTOR

- **Mentored final year students** & **Project Managed** student contributions **to open-source LMS OnTrack**, under the organisation Thoth Tech [https://github.com/thoth-tech]. **OnTrack** is deployed in production in 4 different universities.
  - Provided guidance on SDLC, collaboration, self-management and self-learning to students.
  - Weekly stand-ups, review and feedback to enable student-led projects deliver outcome.
  - Collaborated with Unit Chair and Company director to deliver learning, as well as project outcome.
  - Conduct high level requirement analysis, feature planning, code reviews and code management.
  - Last trimester my student group delivered a vertical slice of course planning feature for students (https://ontrackdocumentation.netlify.app/courseflow/current_stage/).

IBM AUSTRALIA [AUG 2012 – APRIL 2021]

IBM is a Fortune 500 company providing enterprise solutions and services in Cloud, AI, Blockchain and IoT.

ADVISORY SOFTWARE ENGINEER

- **Architect** and **Scrum Master** for innovative **AI Crowdsourcing platform**, enabling organisations crowdsource data analysis and Machine Learning for private/confidential data.
  - o Designed novel platform to provide complete data privacy on hybrid cloud by utilising containers (Kubernetes) to execute public/crowdsourced AI pipelines on data held securely in private servers.
  - o Managed SDLC, implemented **microservices** (Python) and **DevOps** pipeline (Travis CI).
- **Client Engagement Lead** and **Project Manager** for pilot with Australian Government to demonstrate **application of AI** in reducing revenue leakage.
- Developed **production-grade**, **scalable**, containerised service for **Cloud Security Compliance** standardisation and adoption of **US FedRAMP** standards on IBM Cloud.
- Major contributor to **Open-Source** tool for facilitating **OSCAL** (Open Security Controls Assessment Language) document generation and validation (https://github.com/IBM/compliance-trestle).
- **Lead Developer** of Deep Learning and NLP based tool to analyse **compliance** of Financial Advice, increasing audit coverage from 15% to 100% and reducing audit time. Spearheaded overall engineering and design, developed **microservices** and **workflow connecting multiple AI models** for complex and comprehensive compliance assessment.
- **Team Lead** for Dataset Recommendation and Marketplace Valuation research. **Published paper** presented in SIGKDD 2019 workshop.
- Undertook 6-week long **Jawun secondment** in an aboriginal community in South Australia. Built relationship with clients from diverse backgrounds, delivered end-to-end design to translate business and community challenges through to technical solutions.
- Led development of code for visualisation and high-volume processing of Social Media Analytics in Real Time (SMART)- deployed and supported production systems for IAG Australia for a **2-year software licensing** (including 1 year **renewal**), **generating US$150k** in revenue.
- Proof of Concept with **IP Australia** and **RBA** – Machine Learning based apps delivered on cloud.
- Architected **distributed computing** using Apache Spark for **ETL** and training machine learning model on multiple terabytes of data. Reduced training time by 1/4 – results published in Workshop on Noisy User-generated Text, 2016.

QUALIFICATIONS

2010 – 2014   **BACHELOR OF SCIENCE** – University of Melbourne
+ Major in Computer Science
+ Recipient of **100% International Undergraduate Scholarship**
2019   **ADVANCED DATA SCIENCE SPECIALIZATION –** by IBM on Coursera

AWARDS & PUBLICATIONS

8 PATENTS ISSUED
+ Real-time adaptation of textual content dependent on user understanding.
+ System, method, and recording medium for detecting and leveraging brain waves present in a user's state of flow to control digital and physical notifications.
+ Personality based sentiment analysis of textual information written in natural language.
+ Adaptable VR and AR content for learning based on user's interests.
+ Distribution management for public transit vehicles.
+ Adaptive vehicle-proximity guidance.
+ System, method and recording medium for creating a social media sensing post.
+ Cognitive multi-layered real-time visualization of a user's sensed information.

5 PUBLICATIONS IN CONFERENCES
+ Cognitive Compliance: Assessing Regulatory Risk in Financial Advice Documents- AAAI 2020.
+ Evaluating goal-advice appropriateness for personal financial advice- 2019 IEEE GlobalSIP.
+ Towards a Predictive Patent Analytics and Evaluation Platform- ECMLKDD 2019
+ Contextual Data Quality Assessment and Recommending Data Sets- Workshop on Data Collection, Curation, and Labelling (DCCL) for Mining and Learning at 25th ACM SIGKDD 2019
+ Geolocation prediction in Twitter using location indicative words and textual features. WNUT 2016

INVENTION ACHIEVEMENT AWARD- 1ST & 2ND PLATEAU for creative contributions to IBM's IP
100% INTERNATIONAL UNDERGRADUATE SCHOLARSHIP AT UNIVERSITY OF MELBOURNE for outstanding academic achievement

INTERESTS

Home servers, Photography, Travel, Camping and Hiking, Training Guide Dogs