Ayush Goel

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EDUCATION

University of Pennsylvania — Philadelphia, PA
Master of Science in Robotics Engineering | GPA: 3.9 — *May 2024*
Relevant Coursework: *Deep Learning, Machine Learning, Machine Perception, Advanced Robotics, Learning in Robotics*

Thapar Institute of Engineering and Technology — Punjab, India
Bachelor of Engineering - Mechatronics Engineering | GPA: 3.89 — *June 2018*
Relevant Coursework: *Advanced Control Systems, Robotics Engineering, Kinematics & Dynamics of Machine, Signals & System*
Awards: *Certificate of Merit for 3 consecutive years |* **Achievements:** 3RD *rank in Undergrad, Merit-based Scholarships for all 4 years*

SKILLS SUMMARY

- **Programming**: C++, Python, JAVA, Shell Scripting, JavaScript, SQL, MATLAB, HTML5, CSS, XML, NodeJS
- **Tools**: Git/GitHub, Docker, Latex, IntelliJ, Jenkins, Android Studio, MySQL, Maven, MongoDB, Postman
- **Operating Systems**: Linux, macOS, Windows
- **AI/ML/Robotics**: PyTorch, scikit-learn, pandas, TensorFlow, ROS, OpenCV, Gazebo, Sensor Fusion, CARLA, pytest
- **Technologies**: AWS, Spring Boot, REST APIs, Microservices, Apache Tomcat, ElasticSearch
- **Others**: Data Structures, Algorithms

WORK EXPERIENCE

Unicommerce eSolutions Pvt. Ltd. — Gurugram, India
Senior Software Development Engineer — *Aug. 2019 - Aug. 2022*
- Responsible and decision-maker of **critical deliverables for high & low-level design changes** and ensuring **robust end-to-end architecture** of the platform.
- **Served as Team Lead and mentored & managed team of Software Engineers** & ensured shipping of **high-quality products**; **fulfilling 80% more business requirements per sprint**.
- **Reduced cost of infrastructure by 25%** by redesigning integrations for **optimal bandwidth utilization** and implementing **load distribution, IP-rotation**, and **fallback**.
- Led integration of International marketplaces; establishing **company's presence** in 7 middle-eastern regions.
- Regular discussions with **Engineering and Business leaders** for **product and engineering roadmap**.
- Reduced **On-call ticket count** by implementing **managed self service controls** for **OPS & L1 support**.
- **Awards**: Above and Beyond Call of Duty (ABCD) Award
- **Tech stack**: Spring Boot, Java, Mongo, SQL, Zookeeper, ActiveMQ, Elastic Search, AWS, CI/CD pipelines(Jenkins)

SOFTWARE ENGINEERING PROJECTS

- **Led Proxy Service development for Amazon SP and SmartConnect Integration**
  - Pioneered the **design, development** and **maintenance** of an **end-to-end architecture** for a **microservice** in Spring Boot to support **synchronous and asynchronous integrations** with different logistic, omni-channel and external partner systems, thereby increasing the efficiency of integrations by **50%**.
  - Implemented **horizontal scaling** by introducing **Load Balancer** with **Round Robin** logic to route the incoming requests to different proxy instances to increase the **availability of the system, lower downtime and increase throughput**.
  - Integrated **Time aware Least Recently Used (TLRU) cache**, worked on **aspect-driven** and **annotation-driven** architecture, implemented **ThreadPool executors** to support multiple IO operations.
  - Maintained SQL and NoSQL databases in the **master-slave** mode to increase the **reliability** of the system.
  - Onboarded marketplaces like **Amazon Marketplace (SmartConnect and Seller Party models)**, **CloudTail (Vendor APIs)**, and logistic patners like **Amazon Shipping Provider (Shipping APIs).**

- **Integration of Event-driven Architecture using Amazon Web Services**
  - Integrated **EventBridge** to receive **events** from **downstream systems** and route them to target **Simple Queue Service (SQS)**, thereby reducing API calls by **25%** and increasing efficiency of system by **30%**.
  - Used **CloudWatch metrics** to monitor the health of the various **SQS**s and notify on critical events.

- **Visualized system metrics using Elastic Search**
  - Added **Filebeat** on the Integration proxy layer for forwarding log data to a **centralised Logstash server**, which processed the data from various clusters and passed them to **ElasticSearch instances**.
  - Set-up **Kibana** to visualize the ElasticSearch data for each metric and created **Visualization charts** to monitor the different metrics. This helped in reducing the oncall ticket count by **15%**.

- **Dynamic Obstacle avoidance for Self-Driving Car** | *DeepLearning, LSTM, PINN*
  - Implemented **Social LSTM**, **OLSTM** and **GRU** for predicting pedestrians' trajectory.
  - Used **Physics informed Neural Nets** to model the nonlinear dynamics of **MPC** for planning car's motion.

LEADERSHIP EXPERIENCE

Unicommerce eSolutions Pvt. Ltd. — Gurugram, India
Team Lead — *Dec 2021 - July 2022*
- Reviewed the works of my team members, set up best software engineering practices and held tech sessions with team members for each assigned tasks. Also, mentored the members of the team for the various tasks.