

# Ayush Goel

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## EDUCATION

- **University of Pennsylvania, GRASP Lab** Philadelphia, PA  
*Master of Science - Robotics*  
*Relevant Coursework: Machine Learning, Machine Perception, Computer Vision*  
*expected May 2024*
- **Thapar Institute of Engineering and Technology** Punjab, India  
*Bachelor of Engineering - Mechatronics Engineering | GPA: 3.89*  
*Relevant Coursework: Advanced Control Systems, Robotics Engineering, Kinematics & Dynamics of Machine, Signals & System*  
*Awards: Certificate of Merit for 3 consecutive years*  
*Achievements: 3<sup>RD</sup> rank in Undergrad, Merit-based Scholarships for all 4 years*  
*June 2018*

## SKILLS SUMMARY

- **Programming:** C++, Python, JAVA, Shell Scripting, JavaScript, SQL, MATLAB, HTML, XML
- **Tools:** Git/GitHub, Docker, Latex, IntelliJ, Jenkins, Android Studio, MySQL, SQLite, MongoDB, Postman
- **AI/ML:** PyTorch, Scikit, NumPy, pandas, Matplotlib
- **Technologies:** AWS, Spring Boot, REST APIs, Docker

## WORK EXPERIENCE

- **Unicommerce eSolutions Pvt. Ltd.** Gurugram, India  
*Senior Software Development Engineer ( Team Lead )*  
*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.
  - **Mentored & managed team of Software Engineers & ensured shipping of high-quality products; fulfilling 80% more business requirements per sprint.** Based on contributions, I became **Team Lead**.
  - **Reduced cost of infrastructure** by redesigning integrations for **optimal bandwidth utilization** and implementing **load distribution, IP-rotation**, and fallback to achieve a **25% reduction** in costs.
  - 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 *[Certificate]*
  - **Tech stack:** Spring Boot, Java, Mongo, SQL, Zookeeper, ActiveMQ, Elastic Search, AWS, Kibana, Grafana

## PROJECTS

- **Proxy Service for Integrations** *[Video]*
  - 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 a **Load Balancer** with **Round Robin** logic to route the incoming requests to different proxy instances to increase the **availability of the system, lower the downtime and increase the throughput**.
  - Integrated **Time aware Least Recently Used (TLRU) cache, aspect-driven and annotation-driven programming, ThreadPool executors** to support multiple IO oprations, **Log4j2**.
  - 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), Myntra (PPMP)**, and logistic patners like **Amazon Shipping Provider (Shipping APIs)**.
- **Amazon Web Services**
  - Integrated **EventBridge** to receive **events** from **downstream systems** and route the events based on some rule to a target **Simple Queue Service (SQS)**.
  - Used **CloudWatch metrics** to monitor the health of the various **SQSs** and notify on critical events.
- **Elastic Search** *[Video]*
  - Added **Filebeat** on the Integration proxy layer for forwarding log data to a **centralised Logstash server**, which processed the data from various sources 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.
- **Development of Semi-Autonomous Mobile Robot (RoboMuse3XT)** *[Video]*
  - Developed and installed a **4 degree-of-freedom Robotic Arm** with a payload capacity of **300 gm** on RoboMuse3XT
  - Implemented the **ROS Navigation Stack** to map the surrounding environment.
  - Performed **Pattern Recognition** to identify different **medical equipments**.

## LEADERSHIP EXPERIENCE

- **Mechatronics and Robotics Society, TIET** Punjab, India  
*Convener*  
*Aug. 2017 - June 2018*
  - Responsible for **organizing robotic workshops & events, society's finance policies, and procedures**.