Ali Ahmed Sheikh

Computer Science & BTM | KAIST

291 Daehak-ro, Eoeun-dong
Yuseong-gu, Daejeon 34141
(+82) 010-7262-9636, (+92) 332-8009991
ali89743@gmail.com

EXPERIENCE

Pixell, Seoul - *Backend Developer*

JULY 2023 - JULY 2024

- Developed a newer version of the B2B2C platform as part of the 'Pixell App Renewal Project' to incorporate community features into the app. Developed a dashboard to monitor and interact with users.
- [Django REST Framework + PostgreSQL] Designed and developed the database, models, serializers, and APIs for multiple types of queries.
- [OAuth2.0 + JWT] Developed the authentication backend for the app, based on login and *JWT* authentication through Instagram, Tiktok, and Microsoft Entra ID (for the dashboard).
- [Python: Selenium, BeautifulSoup] Worked on *web crawlers* in order to continuously gather data regarding users (after permissions) and provide analytics.
- [System Design, AWS] Learned how to use EC2 and RDS for Cloud storage and infinitely running scripts for the server. Also learnt about system design using *nginx, UWSGI,* and *AWS load balancers*.
- [Figma] Helped with the overall design of the app's *APIs*, including the community features, marketplace, and the dashboard.

[Home Page: Pixell]

Vision and Learning Lab, KAIST - *Research Intern*

JUNE 2023 - FEBRUARY 2024

- [Symmetrization for Neural Networks] Based on the symmetrization technique proposed by our lab in this paper, a new study on the inductive bias of neural networks is conducted.
- [Transformer + MLP] With the base of the architecture being the aforementioned models (since they are universal architectures), developed a new symmetric model, extending with inductive bias.
- [Operator Theory, Bayes' Probability] Used these concepts to study and mathematically explore symmetric transformations and to ascertain the impact of certain space mappings in our model.

[Home Page: Geometric Deep Learning @ KAIST VLLab]

COPACABANA, Seoul - *Backend Developer*

JUNE 2022 - AUGUST 2022

- Helped develop a college entrance prediction service based on Big Data from previous highschool graduates, college data, and user data.
- [Python: Selenium, Pandas, and BeautifulSoup] Developed two scrapers for dynamically-generated Javascript websites in order to collect data.
- [Django REST Framework] Designed and developed the database, models, serializers, and APIs for multiple types of queries, including file upload to the database.
- [AWS] Learned how to use EC2 and RDS for Cloud storage and infinitely running scripts for the server.
- [dbDiagram] Designed and analyzed relational fields and tables, along with the relationship between tables, in the database.

[Home Page: Copacabana]

Software Security Lab, KAIST - *Software Developer*

JANUARY 2022 - APRIL 2022

- [F#] Developed a Binary Parser and Lifter for the SH4-Architecture in the B2R2 project - (See the 'Projects' section below for reference).
- [Linux/Assembly] Analyzed and Debugged the program for further optimization. Worked with SH4-GNU cross-compilation toolchain.

[Home Page: https://softsec.kaist.ac.kr]

XRM Lab, KAIST - *Research Intern*

JANUARY 2021 - MARCH 2021

- [Multiple Programming Languages] Analyzed and developed various algorithms for optimizing content layout in AR/VR applications.
- Researched and worked on FLARE and GRIDS algorithms for optimizing content layout and generation.

[Home Page: https://www.lhlee.com/arm-lab]

PROJECTS

B2R2 - *Software Development* [GitHub]

Developed a parser and lifter to convert binary code into assembly code, then lift it to LowUIR Statements. Specific to the SH-4 Computer Architecture.

Deep Hough Voting for 3D Object Detection in Point Clouds (Implementation) - *CV Algorithm Development* [GitHub]

Developed an algorithm for semantic segmentation of 3D objects using Hough Voting and Deep Learning on PointCloud++

MindBridge - *Software Development (UX/UI)* [Figma]

Developed a working prototype of an all-in-one mental health app. Worked mainly on the interface through Figma while obtaining user feedback in Parallel (as part of the *Design Thinking* process). The idea is to provide an integrated experience through community features, resources, and appointments (focus on Customizability & Convenience).

Bottom-Up and Top-Down Attention for Image Captioning - *Deep Learning Algorithm Development* [GitHub]

Developed a Deep Learning model for image captioning using Fast-RCNN and Attention-based LSTM. The implementation is based on this research paper.

Measuring and Mitigating Name Biases in Neural Machine Translation - *Natural Language processing*

An implementation for the research paper with the aforementioned title, using Python and HuggingFace libraries, along with Deep Learning architectures (LSTM, RCNN). Here's the Research Paper we implemented. Our implementation is a data augmentation method based on *word switching*, where the goal is to construct a comparatively unbiased and sentimentally balanced dataset.

Breast Cancer Histology using Image Classification - *Artificial Intelligence (CS470)* [Project Poster]

An implementation of Breast cancer histology in order to contribute to existing healthcare research. Our implementation is based on a dual-CNN architecture to extract patch-wise and global image features respectively. We use the ICIAR 2018 medical imaging dataset (stained images).

Apple Arcade + - Consumer Behavior - KAIST [Final Presentation]

As part of our 'Consumer Behavior' course, we developed the product and a respective market strategy for a Cloud gaming niche for Apple's 'gaming' market segment. A thorough study of user experience with gaming products and Apple products was conducted in order to derive the solution.

Food Supply Sustainability using Object Detection & Classification - *SAP Services - KAIST* [Final Presentation] [Final Report]

In the KAIST-SAP 'Enterprise Business Solutions with AI' course, we chose the 'sustainability' topic and developed a sustainable AI-based solution which can improve food life and food distribution throughout the world. Our implementation is a **low-code/no-code** solution based on SAP services (AppGyver, CAP, AI Core, Edge Computing, Kyma, BTP).

Technology and Innovation Strategy for Saudi Aramco - *Innovation and Technology Management* [Final Presentation]

Developed a business strategy for Saudi Aramco based on innovation and technology, based on Green and Blue Hydrogen technologies. Both Downstream and Upstream applications are considered.

CocaCola & HealthCare - *Marketing Research* [Final Presentation]

Developed and administered a questionnaire, analyzed user responses and results using univariate and multivariate regression through SPSS

Smart Home - IoT Mobile Application - *Software Engineering Principles*

Developed a prototype for an IoT-based Smart Home application. Drafted documentation and use cases through UML (Unified Modeling Language)

SKILLS

- Reinforcement Learning
    - OpenAI Gym
    - ROS Noetic
- Computer Vision
    - OpenCV
    - PointCloud data processing
- Natural Language Processing (NLP)
- Compiler Design
    - Functional development through Rust
    - Optimizations through AST and CFG
    - Optimizations on Assembly and IR
    - Correctness proofs through Coq
- Business Solutions with SAP services
    - SAP Kyma
    - SAP AppGyver
    - SAP BTP
    - SAP CAP (Cloud Application Processing)
    - SAP SAC (SAP Analytics Cloud)
- Edge Computing (TinyML)
    - Tflite model conversion from keras/h5 model file
    - Quantization
    - Pruning
    - ESP32
- Programming Languages (Functional+OOP)
    - Python, C, Java, Assembly, F#, Scala, JavaScript, PHP, MySQL, Rust, Coq, Django REST Framework
- Machine Learning
    - PyTorch, TensorFlow
    - Certifications: Advanced Learning Algorithms, Supervised Machine Learning

- Software Development / Security
    - Web Security, Linux, ASP.Net Core + CLI, Socket Programming, Software Security, Computer Architecture simulation
- Marketing Research / Strategy
    - Questionnaire Design, Survey Analysis using SPSS and analysis techniques such as ANOVA
- Financial / Managerial Accounting
    - Financial Statement Analysis, Supplier/Consumer analysis, Managerial Strategy
- Research
    - Software Security
    - Geometric Deep Learning
- Workplace Skills
    - Leadership, Organizational Behavior, Negotiation, Team Planning, Teaching, Public Speaking

EDUCATION

KAIST, Daejeon, South Korea - B.S. Computer Science

AUGUST 2019 - FEBRUARY 2024

Pursued a major in Computer Science, with an emphasis on Software/Web Security and Computer Vision. Took courses on web programming, system programming, functional programming, Computer Networks, Software Engineering Principles, 3D Machine Learning, and Web Security.

KAIST, Daejeon, South Korea

B.S. Business & Technology Management

AUGUST 2019 - FEBRUARY 2024

Pursued a secondary major in Business and Technology Management, developing skills in marketing research, managerial accounting, organizational behavior, technology management, and business strategy.

EXTRACURRICULARS

- **KAIST International Students Association**

  [AUGUST 2019 - SEPTEMBER 2022]

    - **Welfare Division - Leader:** Lead the initiatives and team efforts, meant to forward the interests of the international community at KAIST.
    - **Promotions and Public Relations Division - Leader:** Led the promotion campaigns and third-party connections, as well as network building.

- **Welfare Division - Member**
- **Promotions and Public Relations Division - Member**

- **Pakistan Red Crescent Association**

  [FEBRUARY 2018 - MAY 2018]

  - Volunteered for the youth development programme, where we taught and engaged with the underprivileged communities in the rural areas of Islamabad

- **WWF (World Wildlife Fund) - Leader of Energy Conservation Group**

  [JUNE 2017 - AUGUST 2017]

  - Conducted surveys on the carbon footprint awareness in the local community.
  - Conducted awareness seminars to engage the youth and the working generation on the dangers of energy wastage and how to minimize climate change impacts.

- **Oil Painting and Sketching - Diploma**

  [JUNE 2018 - AUGUST 2018]

LANGUAGES

- **English -** Native / Bilingual Proficiency
- **Urdu -** Native Proficiency
- **Korean -** Beginner-Intermediate Proficiency
- **German -** Beginner Proficiency