Aslan Abdinabiev

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Summary

PhD candidate building tools that automatically find and fix bugs in code using large language models. My work has improved automated repair success rates by 37% over existing methods. Currently in the thesis stage of my PhD (expected 2027). Open to part-time research engineer or research intern positions, with interest in transitioning to full-time after graduation.

Education

University of Seoul — Seoul, Korea
PhD in Software Engineering — *2024 – Present*
- Research focus: Automated Program Repair using Large Language Models

University of Seoul — Seoul, Korea
M.Sc. in Software Engineering — *2022 – 2024*

National University of Uzbekistan — Tashkent, Uzbekistan
B.Sc. in Information Technology — *2016 – 2020*

Research Experience

Student Researcher — 2022 – Present
Software Engineering Laboratory, University of Seoul — *Seoul, Korea*
- Built automated program repair tools using both commercial (GPT-4o) and open-source LLMs (CodeBERT, CodeLlama, Qwen 2.5 32B) with RAG and static analysis
- Designed agent-based architecture with dynamic context management, fixing 357 Java and 87 Python bugs across Defects4J and SWE-Bench Lite
- Developed classification-based fault localization achieving 74.6% file-path accuracy on SWE-Bench Lite
- Published papers at IEEE Access, JIPS, SAC, KCSE, and KSCE (Google Scholar)

Projects

Agent-Based APR with Dynamic Context | *Python, Java, GPT-4o, CodeBERT, FAISS* — 2024 – Present
- Multi-agent system (Context Updater, Generator, Overfitting Detector) with dynamic context pool and six static analysis tools for iterative patch refinement
- Fixed 357 bugs on Defects4J and 87 on SWE-Bench Lite, outperforming SRepair (+7.5%), ChatRepair, and ThinkRepair

MCRepair++: Multi-Chunk Program Repair | *Python, Java, PyTorch, CodeBERT* — 2022 – 2024
- Fine-tuned CodeBERT with buggy block preprocessing and proportional patch combination for multi-chunk bugs
- Fixed 79 bugs (31 multi-chunk) on Defects4J, improving 21–342% over TBar, CURE, and CoCoNut

Classification-Based Fault Localization | *Python, GPT-4o, AST Parsing* — 2025 – Present
- Classifies issue descriptions into Full/Partial/Hint categories and routes to tailored symbol-level localization strategies
- 74.6% file-path and 52.3% symbol-level accuracy on SWE-Bench Lite, outperforming Agentless and AutoCodeRover

Technical Skills

AI/ML: CodeBERT, GPT-3/4, CodeLlama, Qwen 2.5 32B, fine-tuning, prompt engineering, RAG, embedding-based retrieval
Languages: Python, Java, SQL, Bash, C#
Frameworks & Libraries: PyTorch, TensorFlow, Hugging Face Transformers, Scikit-learn, FAISS
Tools: Git, Docker, Linux, OpenAI API, JavaParser, Defects4J, SWE-Bench

Languages

English (Advanced, B2–C1) | Korean (Elementary, A2) | Russian (Intermediate, B1) | Uzbek (Native)