AUGER：基于预训练模型的代码审查意见自动生成方法

Lingwei Li, Li Yang*, Huaxi Jiang, Jun Yan, Tiejian Luo, Zihan Hua, Geng Liang, Chun Zuo

The 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE), 2022

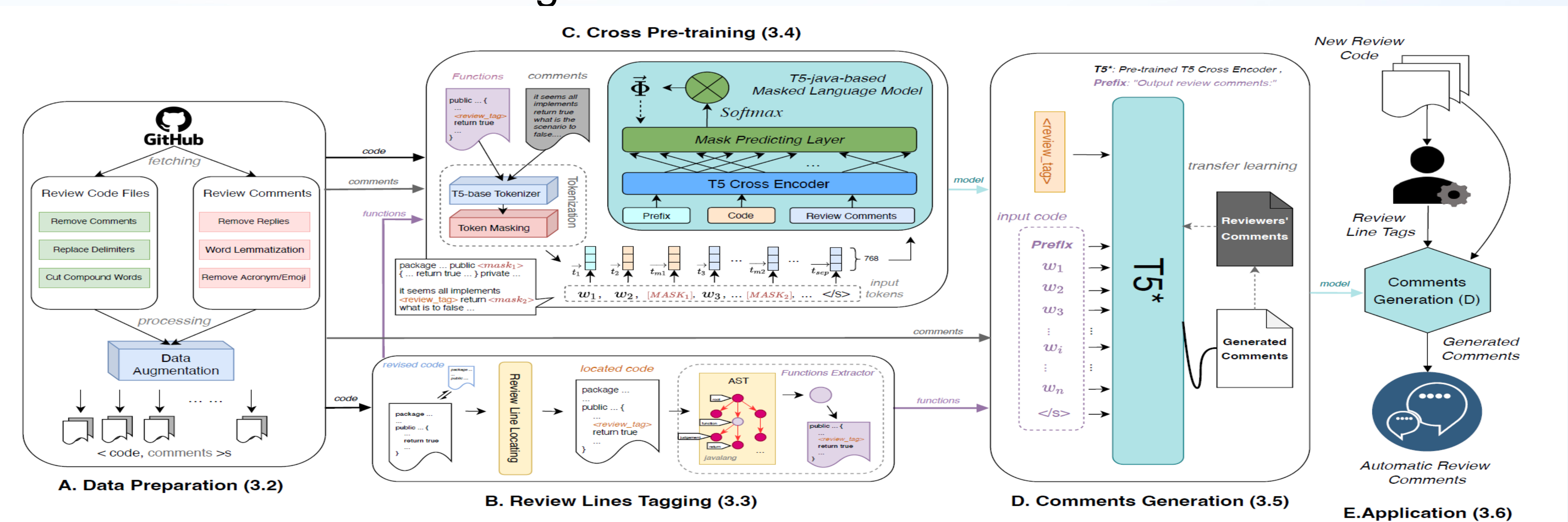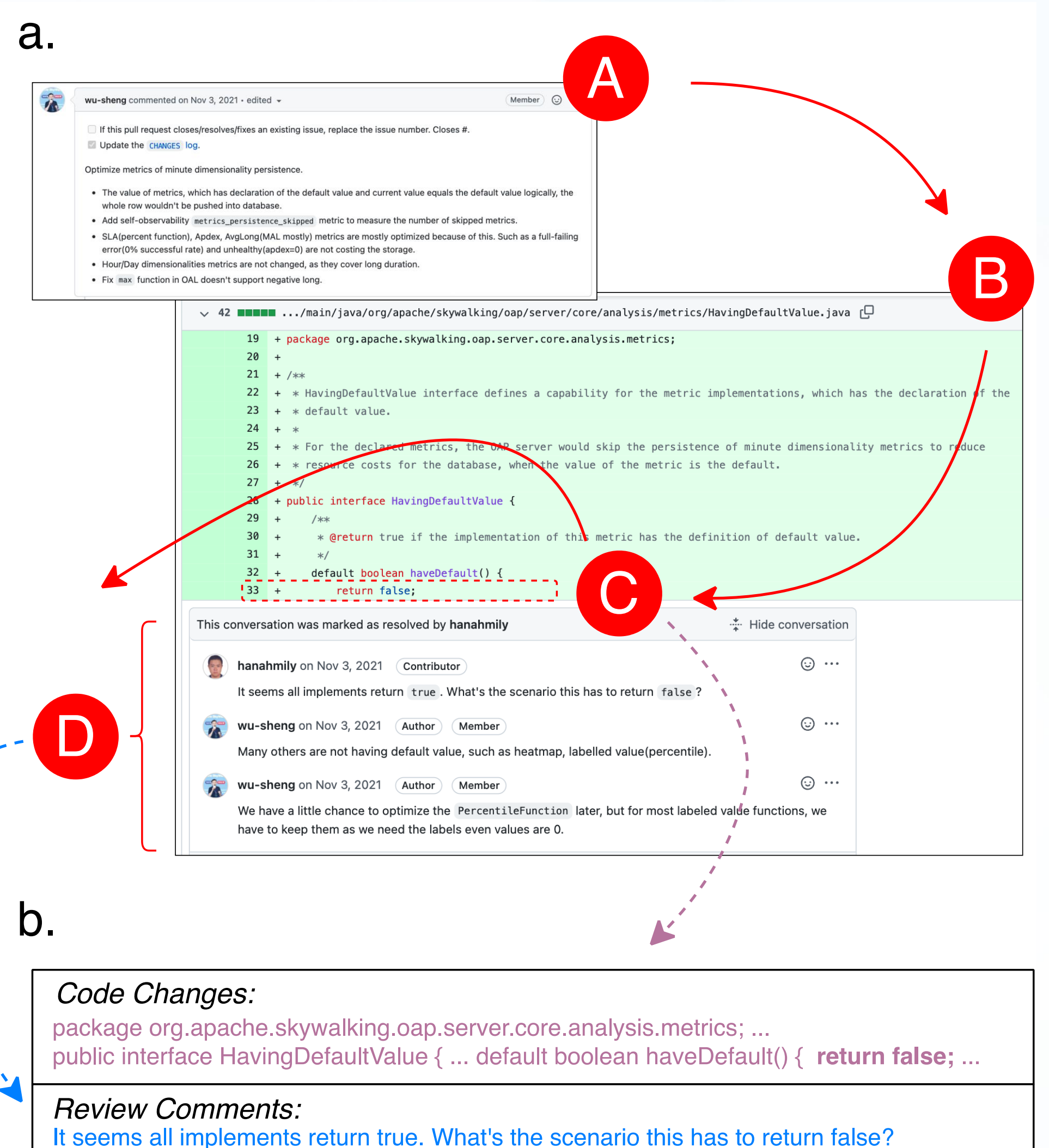杨立 yangli2017@iscas.ac.cn 010-62661198

Background

- Senior or highly skilled reviewers inspect source code and provide **review comments** in software development.
- It summarizes the knowledge of code and leads to quality improvement.

Motivation

- The usefulness remains uncertain.
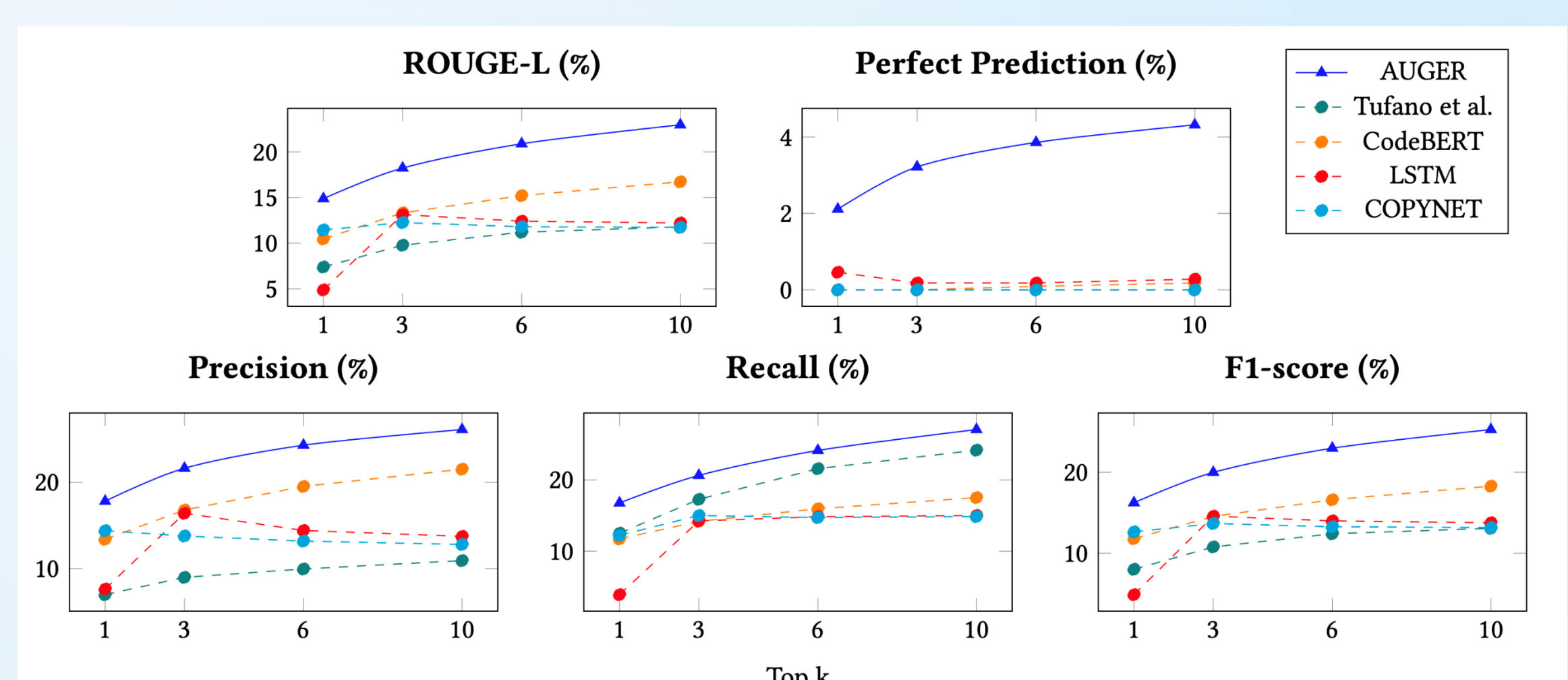- Time-consuming and heavy human effort.

Approach: AUGER

- **Data**: 79344 review activities from 19516 Java PRs in Github.
- **Review Line Tags**: highlight review lines with a special token.
- **Cross Pre-training**: conduct a representation between code and comments.
- **Comments Generation**: generate review comments for code blocks.

Evaluation

- **RQ1: Performance**
  - AUGER outperforms all baselines on five metrics when generating review comments.

- **RQ2: Train Further**
  - In the framework, every component counts for the overall achievement and supports AUGER to train further.

- **RQ3: Usefulness**
  - AUGER can generate review comments as useful as manual ones.

Methods	ROUGE-L	Perfect Prediction
T5 base	22.01%	3.95%
T5 java	22.41%	4.14%
AUGER -<review_tag>	21.47%	3.31%
AUGER -pretraining	22.91%	3.95%
AUGER*	**23.93%**	4.04%
AUGER	22.97%	**4.32%**