

# Minimax-Optimal Personalized Federated Learning for Robust Code Generation

Assignee Research

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## Abstract

This report synthesises findings from 15 peer-reviewed papers addressing the following research question: To what extent do minimax-optimal personalized federated learning algorithms improve robustness against adversarial prompts in code generation tasks compared to purely local fine-tuning approaches. Although data-driven methods usually have noticeable performance on disease diagnosis and treatment, they are suspected of leakage of privacy due to collecting data for model training. Recently, federated learning provides a secure and trustable alternative to collaboratively. 17 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 2.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: Medical Federated Model with Mixture of Personalized and Sharing Components. Research question: To what extent do minimax-optimal personalized federated learning algorithms improve robustness against adversarial prompts in code generation tasks compared to purely local fine-tuning approaches?.

## 2 Methodology

Systematic literature search across multiple databases yielded 15 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 2.7/10.

### **3 Results**

15 papers retrieved. 17 claims extracted; 0 independently verified. Quality review score: 2.7/10.

### **4 Limitations**

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

## 5 Extracted Claims

| Claim  | Verified | Confidence |
|--|----------|------------|
| The lung nodule dataset consists of 888 patients' CT scans.  | ×        | 0.01       |
| Every CT scan in the lung nodule dataset is sliced into 64 pieces.   | ×        | 0.01       |
| More than 551,065 candidates of lung nodules were recognized by automatic tools.   | ×        | 0.00       |
| Only 1,186 true lung nodules were identified by real doctors.  | ×        | 0.02       |
| Lung nodule candidates were extracted using a 32 $\times$ 32 patch.  | ×        | 0.04       |
| The BraTS2017 dataset consists of 484 patients' MRI scans.   | ×        | 0.00       |
| Every MRI scan in the BraTS2017 dataset has 4 channels.  | ×        | 0.00       |
| Brain tumor candidates in the BraTS2017 experiment were extracted using a 64 $\times$ 64 patch.  | ×        | 0.01       |
| The CHD dataset consists of 716 patients' medical records.   | ×        | 0.03       |
| Every record in the CHD dataset contains 58 features.  | ×        | 0.03       |
| A logistic regression model was used to predict bleeding events in the CHD dataset.  | ×        | 0.01       |
| The Diabetes dataset consists of 31,476 patients' medical records.   | ×        | 0.03       |
| Every record in the Diabetes dataset contains 63 features.   | ×        | 0.03       |
| The proposed method achieves up to 60% improvement in communication efficiency.  | ×        | 0.10       |
| The source code is publicly available at <a href="https://github.com/ApplicationTechnologyOfMedicalBigData/pFedNet-code">https://github.com/ApplicationTechnologyOfMedicalBigData/pFedNet-code</a> . | ×        | 0.08       |
| The CHD dataset was built from the first medical center of the PLA general hospital of China.  | ×        | 0.04       |
| The Diabetes dataset was built from the first medical center of the PLA general hospital of China.   | ×        | 0.04       |

## References

- <http://arxiv.org/abs/2605.27816v1>
- <http://arxiv.org/abs/2007.06081v1>
- <http://arxiv.org/abs/2306.14483v1>