FEDSKETCH: COMMUNICATION-EFFICIENT ANDDIFFERENTIALLY-PRIVATE FEDERATED LEARNING VIA SKETCHING

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Abstract. This is an example SIAM LATEX article. This can be used as a template for new articles. Abstracts must be able to stand alone and so cannot contain citations to the paper's references, equations, etc. An abstract must consist of a single paragraph and be concise. Because of online formatting, abstracts must appear as plain as possible. Any equations should be inline.

Key words. Federated Learning, Compression, Sketching, Communication-efficient

1. Introduction. The introduction introduces the context and summarizes the manuscript. It is importantly to clearly state the contributions of this piece of work. The next two paragraphs are text filler, generated by the `lipsum` package.

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The paper is organized as follows. Our main results are in section 2, our new algorithm is in **??**, experimental results are in **??**, and the conclusions follow in section 3.

2. Main results. We interleave text filler with some example theorems and theorem-like items.

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Here we state our main result as Theorem 2.1; the proof is deferred to **??**.

THEOREM 2.1 (LDL^T Factorization [**?**]). *If $A \in \mathbb{R}^{n \times n}$ is symmetric and the*

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42 *principal submatrix $A(1:k, 1:k)$ is nonsingular for $k = 1 : n-1$, then there exists a*
43 *unit lower triangular matrix L and a diagonal matrix*

44 (2.1)
$$D = \mathrm{diag}(d_1, \ldots, d_n)$$

45 *such that $A = LDL^T$. The factorization is unique.*

Algorithm 2.1 Build tree

Define $P := T := \{\{1\}, \ldots, \{d\}\}$
while $\#P > 1$ **do**
    Choose $C' \in \mathcal{C}_p(P)$ with $C' := \mathrm{argmin}_{C \in \mathcal{C}_p(P)} \varrho(C)$
    Find an optimal partition tree $T_{C'}$
    Update $P := (P \backslash C') \cup \{\bigcup_{t \in C'} t\}$
    Update $T := T \cup \{\bigcup_{t \in \tau} t : \tau \in T_{C'} \backslash \mathcal{L}(T_{C'})\}$
end while
return T

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46   **3. Conclusions.** Some conclusions here.

47   **Appendix A. An example appendix.** Aenean tincidunt laoreet dui. Vestibu-
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