Let \( \{X_j\}_{j=1}^{\infty} \) be a sequence of random variables satisfying

\[
E[X_j] = 0, \; E[|X_i.X_j|] \leq 2^{-|i-j|}, \; E[X_j^2] = 1
\]

Prove that

\[
\text{plim}_{n \to \infty} \frac{1}{n} \sum_{j=1}^{n} X_j = 0.
\]