1. **What is the main claim of this paper?  Why is it an important contribution to machine learning and/or data mining?**

Missing data imputation is a crucial task for Wireless Sensor Network (WSN) because data gathered from WSN often suffered from a significant fraction of missing data, and many popular analysis tools/libraries assume complete data as inputs.

We modify the widely successful factorization-based approaches from recommendation systems for missing data estimation in Wireless Sensor Network. We incorporate the temporal dependency and correlations among multiple sensor types into the model, and show that both modifications lead to significantly better imputation quality.

1. **What is the evidence you provide to support your claim?**

We evaluate the approach using two environmental sensor network datasets, one indoor and one outdoor, and two imputation scenarios, corresponding to intermittent readings and failed sensors. More important, we study how imputed values affect the quality of a popular data analysis task-- building regression-based prediction. Our results show that the proposed approaches do lead to better imputation quality and higher quality prediction model.

1. **What papers by other authors make the most closely related contributions, and how does your paper relate to those?**

For missing data imputation in WSN, the Singular Value Decomposition (SVD)-based methods:  
*Spatio-temporal ﬁlling of missing points in geophysical data sets. Nonlinear Processes in Geophysics*  
is conceptually closest to the factorization based approach. However, SVD-based methods are computationally expensive and less accurate as it requires initial assignment of those missing values.

Other related works are also included into the comparison in our study.

1. **Have you published parts of this paper before?  If yes, give details and describe how your paper provides a significant contribution beyond the previous paper(s).**

No

1. **Has (a previous version of) this paper been submitted before?  If yes, where was the most recent previous version submitted? What was the main criticism of the reviewers?  How has it been addressed in this version?**

No