

# Applications of algebra - macro level prediction of antimicrobial resistance

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Algebra is used in modern computation technologies involving approximation, interpolation and optimization of data and its mathematical models. An important application of linear algebra is the principal component analysis (PCA) which is an important dimension-reduction technique. We describe two missing data prediction methods based on PCA and the application of these methods for predicting antimicrobial resistance. Analysis of prediction results is described.

## References

- [1] Daugulis P., Vagale V., Mancini E., Castiglione F. A PCA-based data prediction method *Baltic J. Modern Computing*, 2022, Vol 10-1, pp.1-16.
- [2] Oldenkamp R., Schultsz C., Mancini E., Cappuccio A. Filling the gaps in the global prevalence map of clinical antimicrobial resistance *Proc Natl Acad Sci USA*, 2021 Jan 5;118(1):e2013515118. doi: 10.1073/pnas.2013515118.

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