

I have presented at [CAMDA 2014](http://camda2014.bioinf.jku.at/doku.php/contest_dataset) an extension of our recent matrix factorization-based data fusion approach that couples data fusion with survival regression. [CAMDA 2014](http://camda2014.bioinf.jku.at/doku.php/contest_dataset) runs as a satellite meeting at [ISMB 2014](http://www.iscb.org/ismb2014), Boston, MA, USA. Our presentation got **CAMDA best presentation award**.

Any knowledge discovery could in principal benefit from the fusion of directly or even indirectly related data sources. In this work, we explore if a recently proposed simultaneous matrix factorization data fusion approach could be adapted for survival regression. We propose a new method that jointly infers latent factors by data fusion and estimates regression coefficients of survival model. We have applied the method to CAMDA 2014 large-scale Cancer Genomes Challenge and modeled survival time as a function of gene, protein and miRNA expression data, and data on methylated and mutated regions. We find that both joint inference of factors and regression coefficients on one side and data fusion procedure on the other are crucial for performance. Our approach is substantially more accurate than baseline Aalen's additive model. Latent factors inferred by our approach could be mined further; we found that the most informative factors are related to known cancer processes.