

Winning BioNLP Challenge 2013: Extracting Gene Regulation Network

Written by Marinka

Tuesday, 23 April 2013 16:32 - Last Updated Sunday, 25 August 2013 21:40



I have recently participated in [BioNLP Shared Task 2013 Challenge](http://2013.bionlp-st.org) together with [Slavko Zitnik](http://zitnik.si/wordpress/) and won the first place in the task extracting gene regulation networks.

The goal of the challenge was to assess the performance of information extraction systems to extract a gene regulation network of a specific cellular function in [Bacillus Subtilis](http://en.wikipedia.org/wiki/Bacillus_subtilis). This function was [sporulation](http://en.wikipedia.org/wiki/Sporulation_in_Bacillus_subtilis) and is related to the adaptation of bacteria to scarce resource conditions. The automatic reconstruction of gene regulation networks is of great importance in biology, because it furthers the understanding of cellular regulation systems.

We were provided a manually curated annotation of the training corpus including entities, events and relations with gene interactions. Also, the regulation network that can be reconstructed with interactions mentioned in sentences of training data was provided (picture on the right).

The task required to estimate gene regulation network from test data by specifying a directed graph where vertices represent genes, and arcs represent interactions between genes extracted from the text. The arcs were labeled with an interaction type (e.g., inhibition, activation, binding, transcription).

We hope to describe our approach using conditional random fields and rules in a paper but the details are not public yet (stay tuned).

- [Faculty News](http://www.fri.uni-lj.si/si/novice_in_dogodki/aktivne/15722/novica.html) (in Slovene)
- [BioNLP GRN Task](http://2013.bionlp-st.org/tasks/gene-regulation-network)

P.S. I have been accepted to [Machine Learning Summer School \(MLSS\) 2013](http://mlss.tuebingen.mpg.de) (acceptance rate 26%) that will take place at [Max Planck Institute for Intelligent Systems, Tübingen, Germany](http://www.is.mpg.de) late in August this year. There is a list of highly acclaimed speakers and I am looking forward to it!