

informatik-Kolloquium

Der Fachbereich Informatik der Johannes Kepler Universität Linz¹ lädt in Zusammenarbeit mit der Österreichischen Gesellschaft für Informatik (ÖGI) zu folgendem Vortrag ein:

Susanne Fischer

Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health,
Institute of Epidemiology

Spatial clustering of rabies virus genomes using affinity propagation clustering

Tuesday, May 10, 16:30
Room JKU S2-120 in Science Park 2

Abstract:

Rabies is one of the oldest known zoonosis caused by rabies virus, which is an important species of the genus *Lyssavirus*. So far, the spread of rabies virus is analyzed on regional levels since a global phylogenetic clustering and classification system is not yet available. Phylogenetic trees of rabies genome sequences calculated by the Maximum Likelihood method suggest a space-dependent clustering. However, these analyses revealed two limitations: (i) The analysis of large datasets results in highly complex dendrograms. (ii) The clustering of phylogenetic trees by visual inspection leads to different results since criteria for cluster definition are still lacking.

My presentation aims at showing how these limitations can be solved by means of affinity propagation clustering. This is a mathematical method that is able to use the phylogenetic distance matrix to allocate sequences to generic clusters. I will present you how affinity propagation clustering was applied to the distance matrices derived from the RABV full genome sample sets, resulting in a cluster structure which strongly corresponds to the structure of the Maximum Likelihood-based phylogenetic tree. At the end of my presentation I would like to discuss on strategies to implement a workflow based on this method to validate evidence for space-dependent clustering of rabies virus sequences.

Short Bio:

Susanne Fischer holds a master's degree in biosystems technologies and bioinformatics from the Technical University of Applied Sciences in Wildau-Germany. In 2013, she worked at BIOCUM AG Berlin as an assistant for database curation. Since 2014, she has been working on her doctoral theses on spatial and temporal distributions of rabies viruses at the Friedrich-Loeffler-Institute in Greifswald-Isle of Riems. This work is part of the *Lyssavirus* Research Network and a cooperation with the biomathematical institute of the Ernst-Moritz Arndt University of Greifswald.

*Einladender: Univ.-Prof. Dr. Sepp Hochreiter
Institute of Bioinformatics*

¹ Der Fachbereich (<http://informatik.jku.at>) besteht aus folgenden Instituten: Application Oriented Knowledge Processing (FAW), Bioinformatics, Computational Perception, Computer Architecture, Applied Systems Research and Statistics, Computer Graphics, Formal Models and Verification, Networks and Security, Integrated Circuits, Pervasive Computing, Software Systems Engineering, System Software, Telecooperation, Signal Processing