Talks

- **a real-world problem leading to a graph problem**
- **special properties of those graphs**
- **how to solve the graph problem efficiently utilizing those properties**
- **interpreting graph solution to real-life problem**

Possible topics:

- Permutation graphs, trapezoid graphs and their applications in computer science and other areas;
- Chordal graphs, chordal bipartite graphs and their applications in data bases, perfect Gaussian elimination and other areas of computer science;
- Circular-arc graphs and their applications in computer science and other areas;
- Split graphs and degree sequences;
- Comparability and co-comparability graphs and their use;
- Circle graphs and polygonal graphs and their use;
- Hyperbolic graphs and real-life social, biological, communication and other networks;
- Disk intersection graphs and wireless networks;
- Boxicity k graphs and their applications;
- String graphs and their use;
- others.

Some sources

1. Martin Charles Golumbic, Algorithmic graph theory and perfect graphs, Annals of Discrete Mathematics, Elsevier, vol. 57, 2004 (2nd edition).
2. T.A. McKee, F.R. McMorris, Topics in Intersection Graph Theory, SIAM Monograph on Discrete Math. and Appl., 1999.
3. Graph Classes: A Survey is published by SIAM, the Society for Industrial and Applied Mathematics, Philadelphia, as a volume of the SIAM Monographs on Discrete Mathematics and Applications. (see alsohttp://www.informatik.uni-rostock.de/~ab/survey/survey.html)
4. F.S. Roberts, Discrete Mathematical Models with Applications to Social, Biological and Environmental Problems, Prentice-Hall, Englewood Cliffs, NJ, 1976.
5. Web sources:
    a. http://en.wikipedia.org/wiki/Intersection_graph
    b. http://videolectures.net/sicgt07_kratochvil_gig/
    c. http://www.eprisner.de/Journey/Rahmen.html
    d. http://www.fi.muni.cz/~hlineny/Vyuka/GT/Grafy-lect-eng-9.pdf
    e. http://www.ii.uib.no/~pinar/chordal.pdf
    f. http://www.ii.uib.no/~pinar/graph.pdf
    g. http://bix.ucsd.edu/bioalgorithms/presentations/Ch08_GraphsDNAseq.pdf
6. Others

IMPORTANT: Your talk needs to answer/address the following.

1. A good explanation/definition of the real-world (R-W) problem.
2. How to construct a graph from that R-W problem?
3. What graph problem do you get from the R-W problem?
4. Is that graph problem hard on general graphs?
5. What special properties does your graph have that help to solve that graph problem more efficiently?
6. How to interpret the graph problem's solution back for the R-W problem?