Review of research papers.

Looking for new developments in the field of AI planning and search I came across in three papers from the publications of the Proceedings of the Twenty-Seventh International Conference on Automated Planning and Scheduling (ICAPS 2017) that raised my interest for the results obtained in solving planning problems.
In the A Polynomial Planning Algorithm that Beats LAMA and FF paper the authors Lipovetzky and Geffner describe how heuristic and width based search can be combined to produce a planning algorithm that have a such good performance that can compete with the state of the art. This algorithm, based on the best first width search (BFWS) is a complete search algorithm that can be easily turned into a polynomial but incomplete search algorithm by pruning the states s according to the rule based on the novelty (Lipovetzky and Geffner 2012). For example, a new state s has novelty 1 if there is an atom X = x that is true in s and false in all the states s' generated before s. This algorithm that prune state with novelty > 1 is called 1-BFWS. Using combination of k-BWFS variants to have polynomial algorithm or k-BWFS variants in combination with LAMA or FF algorithms it has been possible to obtain good performance in the IPC-2014 competition.
In the Exploration Among and Within Plateaus in Greedy Best-First Search the authors Asai and Fukunaga showed that type-based diversification framework could be used to unify inter-plateau and intra-plateau diversification in the Greedy Best First Search. However in graphs where nodes have largely varying number of neighbors the type based diversification is not sufficient and the IP-diversification addresses this issue. Therefore using inter-plateau and intra-plateau exploration and IP-diversification into FD/LAMA it is possible to have performance that can compete with the state of the art.
In the Complete Local Search: Boosting Hill-Climbing through Online Relaxation Refinement the authors Fickert and Hoffmann describe online relaxation refinement. They showed the pertinence of online relaxation refinement for local search obtaining completeness even for variants of hill-climbing, and even when using incomplete helpful actions pruning mechanisms. They showed that with this approach it has been improved performance

for hill-climbing algorithms bringing it possible to compete with the state of the art.