Zurich-Based Startup Develops Algorithm for the Swiss Federal Railways (SBB)!

Swiss Federal Railways (SBB) want to kick off a new era: An algorithm shall optimize their train schedules. The aim: Satisfied travelers and an optimally utilized rail network. Complementing internal developments SBB has launched an international competition. About 400 international IT expert teams participated in this competition. Swiss entrepreneurs achieved the second place with their startup Aspaara Algorithmic Solutions AG.

Manual timetable planning at SBB slowly but surely reaches its limits as they state in a notice guiding the competition hosted by crowdai.org. SBB looks for a completely new software solution that solves the challenges associated with timetable planning. The young Zurich-based team from Aspaara Algorithmic Solutions AG performed this highly complex task and developed a completely new planning algorithm, tailored to the specific needs of the Swiss Federal Railways. This algorithm computes the optimal running and waiting time for every train by means of a multi-stage optimization procedure.

“Trains are not cars, they cannot overtake each other. Trains have different priorities and specific features. Just the smallest disturbance on a route triggers a chain of following subsequent events: Missed connections, long waiting times for passengers, and financial losses. Our challenge was to find the perfect solution.”, Alexander Grimm (31), co-founder and CEO of Aspaara. The task to optimize the timetables of Swiss Federal Railways is rather challenging. The completely new Aspaara planning algorithm, which has been customized according to the needs of the Swiss Federal Railways, computes an almost perfect solution by means of a multi-stage optimization procedure. A major success of the young Zurich-based company is an algorithm that reacts adaptively to predictable and unforeseeable changes and events. The timetable optimizes the schedule in a few minutes.

Dr. Kevin Zemmer (31), co-founder and technical director of Aspaara, says, “With our solution – under normal conditions – all trains arrive in scheduled time. If you take, however, unforeseeable network disturbances into account, our robust solution will generate only a delay of 1.5 seconds per train on average. It always keeps an eye on the overall system.” Together with former colleagues from the Swiss Federal Institute of Technology (ETH) Aspaara established a small and effective team. “We are a very small, very creative team, and in just three months we have surpassed globally over 400 IT experts and companies. This makes us very proud! The striking power of small, agile and focused teams in the area of Software Development is huge.”, states Zemmer.

From a scientific point of view the mathematical complexity itself is an exciting challenge, which the team of Aspaara eagerly accepted. The competition rules were quite strict. The allowed computation capacities were limited, the time pressure was high, and the conceptual prerequisites were unalterable. At the current moment it is unknown how the Swiss Federal Railways is going to integrate the winners’ solutions into their operations. IT experts of SBB have already analyzed the key concepts, and have classified them as highly relevant for their operations. The young entrepreneurs of Aspaara will use their prize money of 5,000 Swiss Francs for further education of their successful team.

About Aspaara Algorithmic Solutions AG:
Aspaara Algorithmic Solutions AG, headquartered in Technopark Zurich, was established in 2015. Aspaara develops integrated, customized to the individual needs, state-of-the-art solutions for automation and optimization of complex planning processes. It's clients are ground handling companies at airports, big logistics companies with complex, operational structures, and consulting companies like PricewaterhouseCoopers. Further information on www.aspaara.com

Contact for media inquiries:
Alexander Grimm (CEO), MSc, ETH Physics
Founder and Executive Director of Aspaara Algorithmic Solutions AG
Tel.: +41 (0) 76 448 20 91
E-mail: alexander.grimm@aspaara.com
www.aspaara.com

More about the Train Optimization Challenge of the Swiss Federal Railways:
https://crowdai.org/challenges/train-schedule-optimisation-challenge