8vance
Recruitment implies time consuming, laborious processes for job-seeker and companies alike. Growing mobility, decreasing loyalty, shortage of highly qualified staff, regional focus, a growing competence mismatch and higher global volatility, increases uncertainty at both the job-seeker as well as the company side. The quality level of matches has not increased despite big data and web-recruitment. Data overload and outdated information make the market even less transparent. Search technologies have their limits and provide suboptimal results. All this makes recruitment today subjective, slow, time consuming, laborious and expensive with a fluctuating quality.

8vance introduces pro active “deep matching” of extensive profiles of both the job-candidate as well as the vacancy. The profiles (TalentDNA and JobDNA) include hard and soft aspects. This means that a jobs finds the best suitable candidates automatically. 8vance works cross border and cross language, providing an open and transparent international platform. Companies and job-candidates are provided with their “specific labour or job markets” allowing them to see the whole picture and to analyse threats and opportunities hence avoiding a lot of uncertainty, anticipate the future, take better and faster decisions and more.

Recruitment becomes better (higher quality, more objective) and easier and faster and more affordable, while both sides gain full control.

Problem
8vance uses artificial neural network technology, based on the Self Organising Map (SOM), for the structuring and visualisation of the candidates and their targeted jobs. Training this network is computational intensive. The sizes of typical maps can become larger than 1 million data samples by 40,000++ features. Needless to say that this training should be accelerated to the max in order to minimize the lag between current market situation and latest map visualisation and should be less than 24 hours.

The problem involves the training of 2 separated subspaces, one that utilises an Euclidean distance metric and the other a cosine similarity metric. In particular the latter one can ‘grow’ its feature size to large dimensions.

Assignment
The assignment involves a combination of creative mathematical modelling of the various training concepts for an extremely large SOM, a to be determined GPU based computing platform for this purpose and an efficient mapping of SOM on a GPU. An important aspect of this mapping is the scalability, i.e. adding more GPU resources should lead to a proportional performance increase.

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The main location for the student is in Venlo, near the Canon/Océ R&D labs, and near the A67.