

# Scientific Basis\*

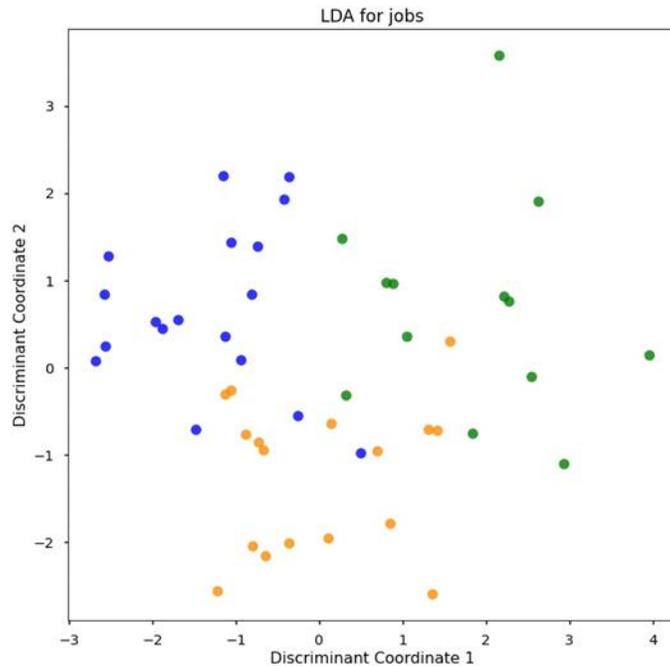
- Start research: august 2020
- First phase of research: analysis of existing jobs in the TalentPassport (=talent-scan) database
- Second phase of research: data collection and analysis of 11 new jobs from different sectors  
(engineering, healthcare, education, government, service sector, manufacturing,...)
- Third phase of research: validation of the algorithms
- End research: july 2021

\* *This research was done in collaboration with the University of Antwerp (2020-2021)*

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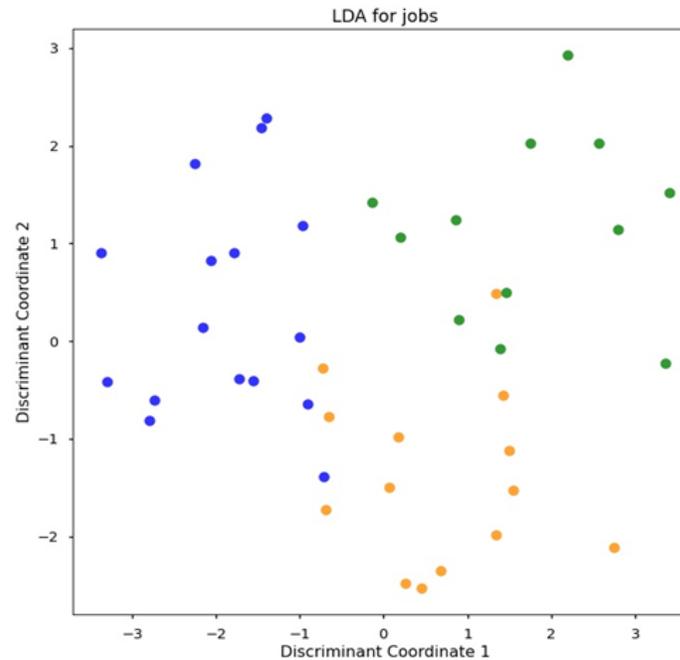
## Method 1 :Linear discriminant analysis:

3 different jobs (blue /orange / green) , each bullet is a person in the function



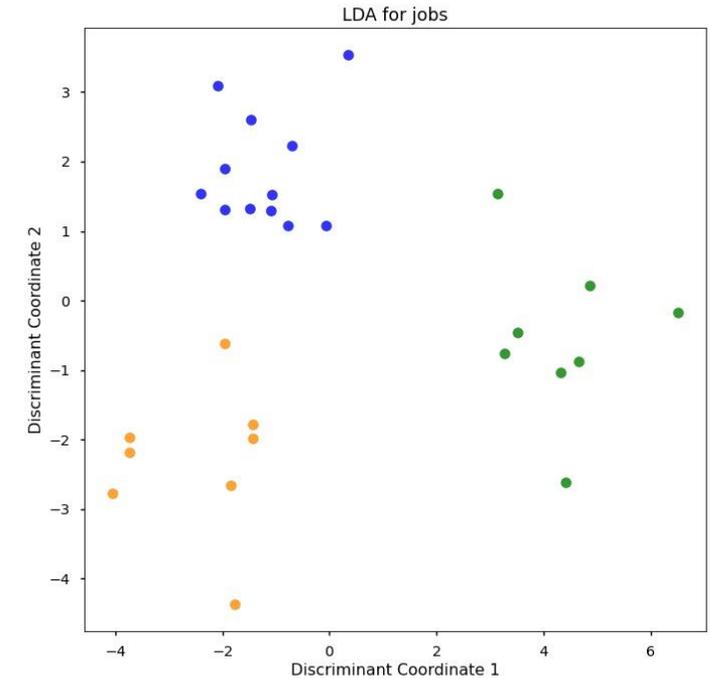
all people (no minimum DNA match)

**Confusion matrix accuracy: 64%**



minimum 60% DNA match

**Confusion matrix accuracy: 70%**



minimum 80% DNA match

**Confusion matrix accuracy: 100%**

These results show that we can use the talent DNA algorithm to determine the distinctive talents of a job.

*Note: the discriminant analysis is done with all scores (all talents) of The Talent Passport.*

(validation by the University of Antwerp , July 2021)

## Method 2 : Cross validation (leave one out methode):

### 3 different jobs

At each passage ("loop") we randomly take one person from each group of the 3 jobs.  
 We determine the talentDNA for each of the 3 functions based on the remaining individuals.  
 We check for each of the randomly selected individuals with which DNA they match best.  
 If the DNA match is the highest with their own function, this is a correct prediction.

```
cross validation TRAIN1,TRAIN2,TRAIN3,TEST1,TEST2,TEST3
-----
number of loops: 100
number of predictions: 300
accuracy: 0.74
```

all people (no minimum DNA match)

**Prediction accuracy: 74%**

```
cross validation TRAIN1,TRAIN2,TRAIN3,TEST1,TEST2,TEST3
-----
number of loops: 100
number of predictions: 300
accuracy: 0.79
```

minimum 60% DNA match

**Prediction accuracy: 79%**

```
cross validation TRAIN1,TRAIN2,TRAIN3,TEST1,TEST2,TEST3
-----
number of loops: 100
number of predictions: 300
accuracy: 0.89
```

minimum 80% DNA match

**Prediction accuracy: 89%**

These results show that we can use the talentDNA algorithm to determine the distinctive talents of a job.

(validation by the University of Antwerp , July 2021)