

# 3<sup>rd</sup> place

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### The development of a Dynamic Multivariate Machine Learning Algorithm to predict the chances of employment for young graduates

#### 01 <introduction>

Technological advancements are creating more and more modern activities to become redundant. It is apparent that it has affected young people's career paths. The skills that young graduates require is changing in nature and in difficulty, which includes broadening the nature of their career paths. These broadening social challenges necessitates for "career path" analysis. A particular phenomenon that has shown great promise in the field of prediction is machine learning. As an industrial engineer, I seek to solve this complex problem by creating a solution through the integration of information, machines and technology.

#### 02 <problem\_statement>

##### Youth unemployment

has been a persistent and ongoing problem worldwide and projections indicate the situation is likely to worsen. Young people are **4X** more likely to be **unemployed** compared to adults. The societal and economical need for certain careers is always changing and driven by numerous factors. These factors, also known as system drivers, are time dependent meaning they too fluctuate over different periods. With so many diverse elements affecting career path factors it's understandable that young graduates are over-fleeced and uncertain about their decided professions.

#### 05 <results>

##### (i) systems drivers

1. Education
2. National Economic Diversity
3. Technological inclusion
4. Nationality
5. Field of Study
6. Graduation level
7. Gender
8. Age Group
9. Race
10. Alumni Matter
11. Interpersonal Skills

##### (ii) hybrid structural interaction matrix

Combined Question: Can factor be influenced by factor j in respect of an applicant getting a job after graduation?

	1	2	3	4	5	6	7	8	9	10	11
1	1	0	0	0	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0	0	0	0	0
3	0	0	1	0	0	0	0	0	0	0	0
4	0	0	0	1	0	0	0	0	0	0	0
5	0	0	0	0	1	0	0	0	0	0	0
6	0	0	0	0	0	1	0	0	0	0	0
7	0	0	0	0	0	0	1	0	0	0	0
8	0	0	0	0	0	0	0	1	0	0	0
9	0	0	0	0	0	0	0	0	1	0	0
10	0	0	0	0	0	0	0	0	0	1	0
11	0	0	0	0	0	0	0	0	0	0	1

##### (iii) hierarchical tree structural diagram

##### (iv) scenarios

##### (v) ANN predictive modelling

As per equation 3, the error of the predictive model, on deployed bases, is to recover each condition's disposition in the identified "system driver factor" that determines the chance of getting a job. The score shows the generalised training performance for all these responses and the generalised training algorithm's effectiveness.

Output = 0.87 \* Target = 0.0086

#### 03 <research\_objectives>

#### 04 <research\_approach>

1. Research goal/mission & gather secondary data
2. Engage in discussions with experts in field
3. Define a statistical question
4. Set up a Hierarchical Tree Structural Diagram (HTSD)
5. Determine model's requirements by exploring the available software

##### IE tools & techniques

1. Brainstorming
2. Cause & Effect Diagram
3. Prioritisation Model
4. Hierarchical Tree Structural Diagram
5. Multiple Decision Criteria Analysis
6. Technical solutions to individual problems
7. Machine Learning
8. Data Analysis

#### 06 <conclusion>

In the future, an AI algorithm will be beneficial to a large portion of the population and supply accurate and precise information to make short and long-term career path decisions. Hence, currently satisfied students can use it to start planning how to enhance their current choice of career. The algorithm can reveal if a career prospect is either "rising" or "growing", calculate at what rate within a given time horizon it is doing and start time in the future the prospect will be feasible. This will allow students to make decisions on staying in their career field or bridge into a new field.

