HOW WE TALK ABOUT HOW WE WORK: THE EMERGING LANDSCAPE OF SKILLS TAXONOMIES & HOW AI IS IMPROVING THEM

Maury Shenk, CEO, LearnerShape

Webinar

Tuesday, 02 October, 11:00 GMT

Professor Michael Mainelli

Executive Chairman

Z/Yen Group

FS Club

Platinum Sponsors

Invest Northern Ireland · CDI China Development Institute · FINANCE MONTRÉAL · AIFC · Seoul Together we stand · Busan Finance Center · HK Financial Services Development Council 香港金融發展局

LuxembourgforFinance Agency for the Development of the Financial Centre · ADGM AN INTERNATIONAL FINANCIAL CENTRE · Dubai International Financial Centre · THE GOVERNMENT OF MOSCOW The Department for External Economic and International Relations of Moscow · GT Global Times Consulting

Gold Sponsors

Aptitude SOFTWARE · BRIDGEWORKS · FEATURE SPACE OUTSMART RISK · ARBORETUM · Crown Agents Bank · CERIDIAN · ENTRUST

Silver Sponsors

Bottomline · GPS global processing services · BCS CONSULTING Expect Excellence · P2 CONSULTING · The Technium Global SERVICE WITH INTEGRITY · expert.ai · CLOUDSOFT · PRAXITY Empowering Business Globally

Bronze Sponsors

Profile Software · (expleo) · CONTACT PARTNERS · alyne · ESTATES AND INFRASTRUCTURE EXCHANGE

Personal Sponsors

Challenge Curve · Currencycloud · worldpay · mastercard · RADIX · ZB · LEI GLOBAL LEGAL ENTITY IDENTIFIER FOUNDATION · cuffassociates PART OF THEBES GROUP · Volanté · TRANSPARENCY TASK FORCE · CYGNETISE · Catalina Consulting · AMSOM · GIBRALTAR STOCK EXCHANGE

Today's Agenda

- 11:00 – 11:05   Chairman's Introduction

- 11:05 – 11:25   Keynote Presentation – Maury Shenk

- 11:25 – 11:45   Question & Answer

FS Club

FS Club

Maury Shenk

CEO

LearnerShape

LearnerShape

Flexible open-source learning infrastructure

How We Talk About How We Work
The Emerging Landscape of Skills Taxonomies,
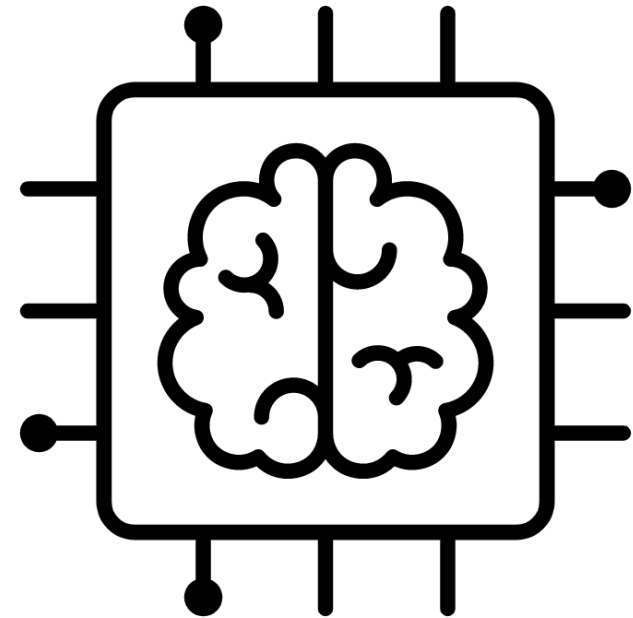and How AI Is Improving Them

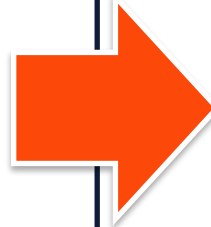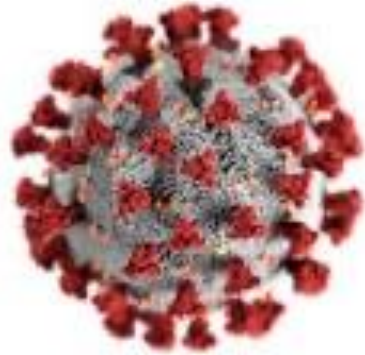## Maury Shenk
CEO, LearnerShape

FS Club – 2 November 2021

What if we could use a variety of AI methods to provide a portable representation of every individual to inform their lifetime learning journey?

Job Disruption and Reskilling

87%

of executives face skill gaps now or expect gaps within 3-5 years[1]

70%

of executives expect disruption of more than 10% of their companies' roles within 5 years (and 30% expect more than a quarter)[1]

"We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another."

\- Klaus Schwab (2016)

"Investment in upskilling has the potential to boost GDP by $6.5 trillion by 2030."

\- World Economic Forum (2021)

Source: [1]McKinsey, 'Beyond hiring: How companies are reskilling to address talent gaps' (2020)

Private & Confidential

LearnerShape

Poll #1

What percentage of jobs in your company and/or field of work do you expect to change significantly in the next decade?

A. *< 10%*

B. *10 – 25%*

C. *25 – 50%*

D. *50 – 75%*

E. *> 75%*

Hiring

Reskilling

Workforce Mobility

LearnerShape

Skills Taxonomies (1) – Big Players

- Launched 1997 to replace 70-year-old US Department of Labor *Dictionary of Occupational Titles*
- Focused on US labor market
- Based around O*NET Content Model, including many categories (e.g. skills, tasks, knowledge, work styles, technology skills & tools) across six categories (e.g. worker characteristics, worker requirements)
- Widely used for research
- https://www.onetonline.org/

- Developed since 2010 by European Commission
- Published in 24 EU languages, Norwegian, Icelandic and Arabic
- Defines skills/competences, qualifications and occupations
- Skills divided into attitudes and values, knowledge, language skills and knowledge, and skills
- https://ec.europa.eu/esco/portal/home

REINVENTING LEARNING

LearnerShape

Skills Taxonomies (2) – Technology

- Skills for the Information Age – developed by non-profit since 2000 (now SFIA 8)
- Defines professional skills at 7 levels of responsibility competencies, knowledge
- Focused on information technologies and associated processed
- Requires paid license for commercial use
- https://sfia-online.org/en

- Developed since 2008 and published in 2010, by European Committee for Standardization (CEN)
- European framework for ICT professionals, used as input to ESCO
- Based around 41 competences at 5 proficiency levels
- https://www.ecompetences.eu/

REINVENTING LEARNING

LearnerShape

Skills Taxonomies (3) – New Kids on the Block

- Announced January 2021
- "Sythesizes and builds on existing taxonomies"
- https://www.weforum.org/reports/e47fb10b-de89-4092-98c6-198fd2328556

- Released in 2018
- "The UK needs a skills taxonomy"
- 10K+ skills, in 6 clusters, with 35 groups and 143 skills clusters
- https://data-viz.nesta.org.uk/skills-taxonomy/index.html

- LinkedIn Skills Graph
- Proprietary for LinkedIn users, but considering broader access
- https://opportunity.linkedin.com/skills-graph-sign-up
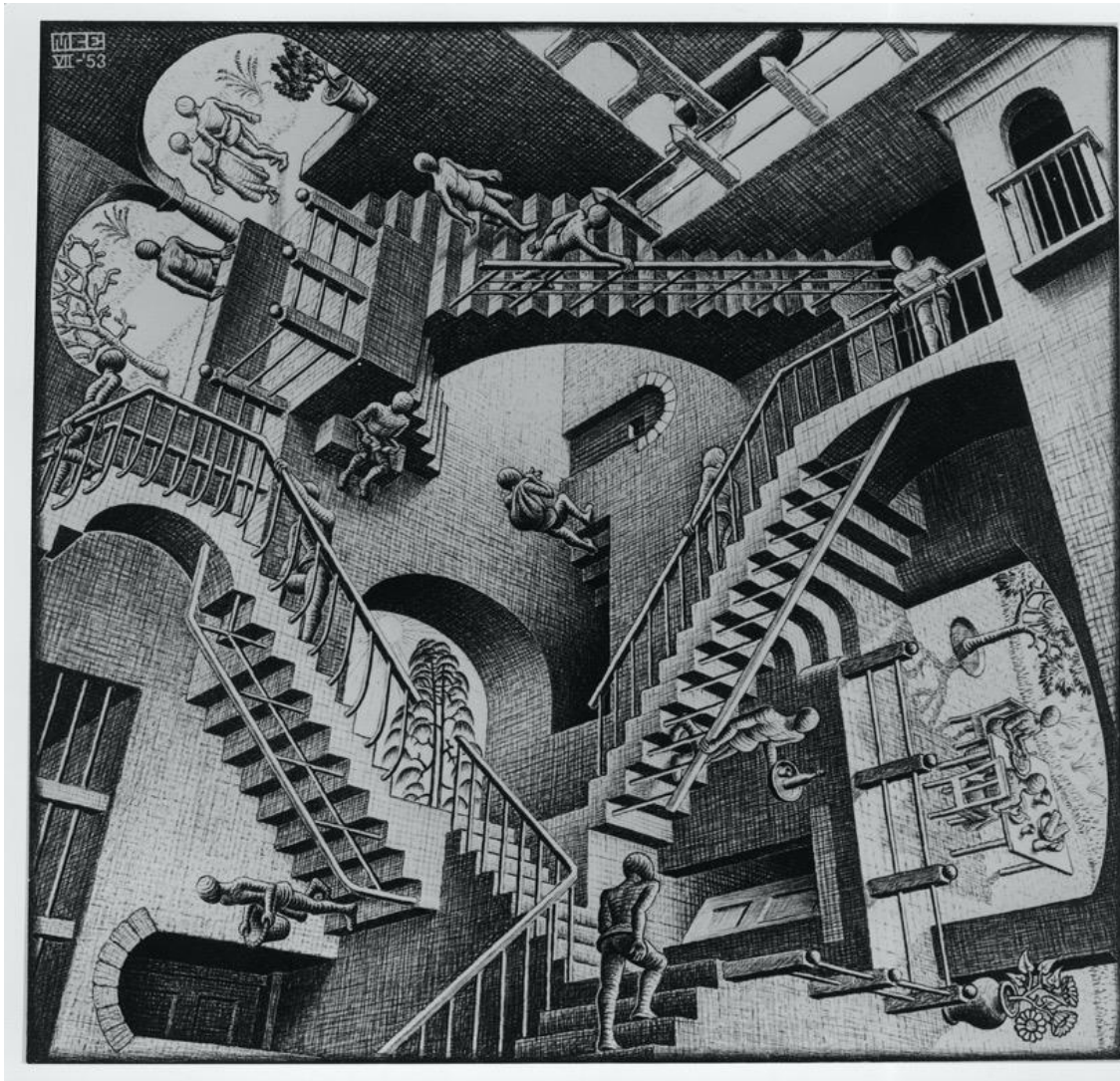
LearnerShape

Confused?

LearnerShape

Poll #2

Do you encounter skills taxonomies often at work?

A. Yes

B. No

LearnerShape

Skills and Machine Learning

Job Market Data

*

Word Embeddings

king – man + woman = queen

queen

king

woman

man
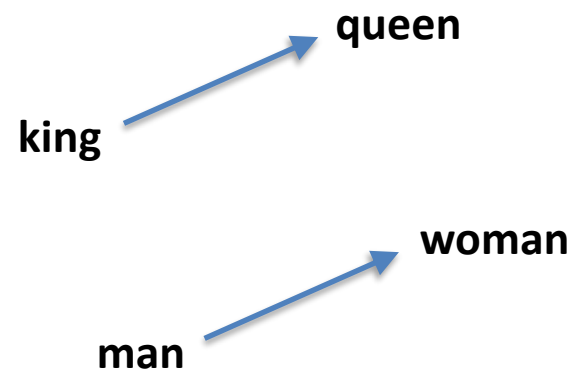
Pre-Trained Language Models

Output Probabilities

Softmax

Linear

Add & Norm

Feed Forward

Add & Norm

Multi-Head Attention

Nx

Add & Norm

Feed Forward

Add & Norm

Multi-Head Attention

Nx

Add & Norm

Masked Multi-Head Attention

Positional Encoding

Positional Encoding

Input Embedding

Output Embedding

Inputs

Outputs (shifted right)
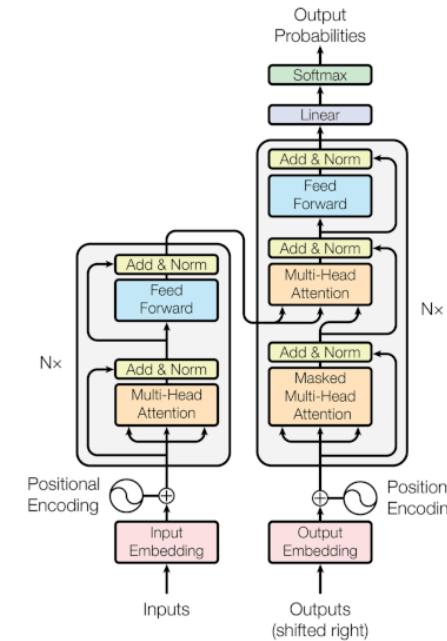
Transformer architecture

- BERT
- GPT-3
- Universal Sentence Encoder
- ELECTRA
- many more

LearnerShape

Optimizing Skills Structure for Machine Learning

root

computers

social sciences

architecture

programming

library science

libraries

libraries

libraries

Python   numpy   Hugging Face

libraries
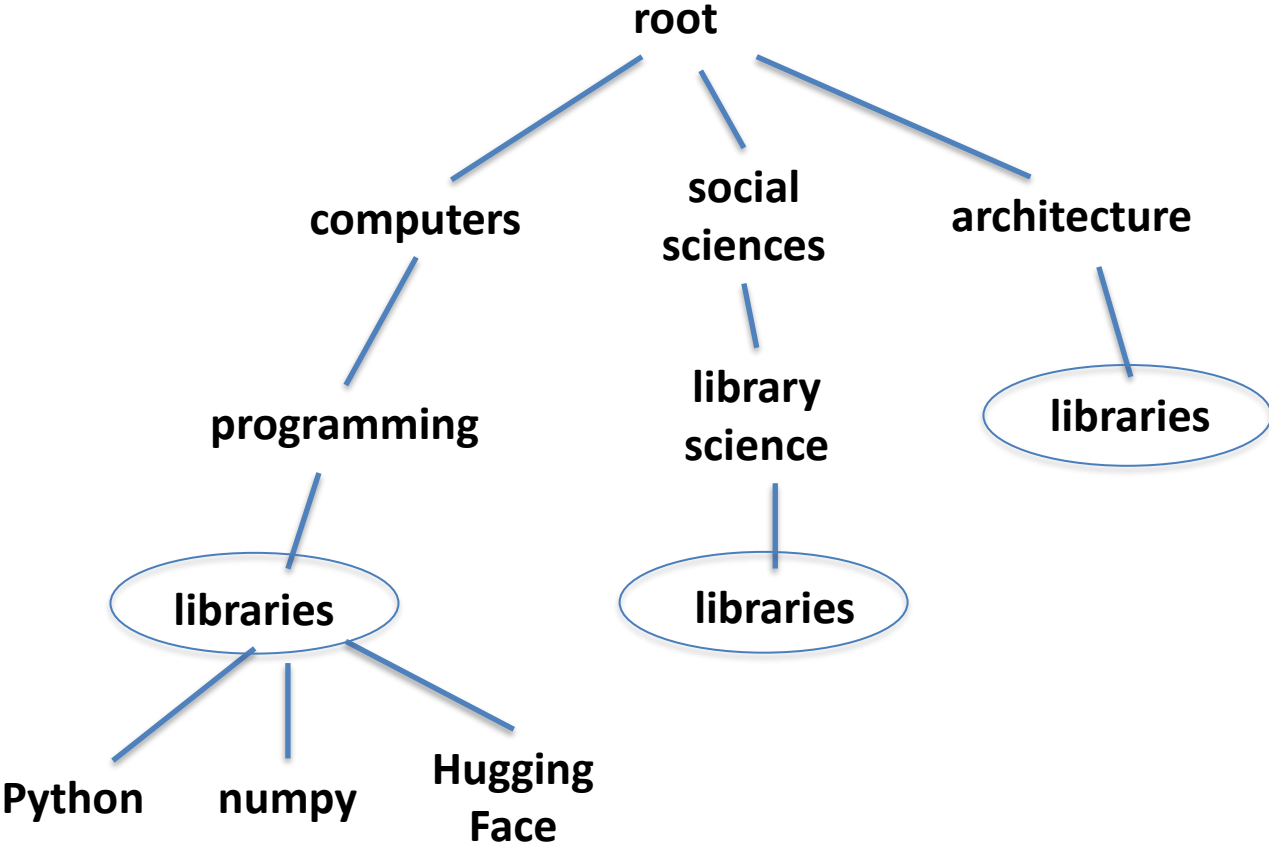
LearnerShape

LearnerShape Open Source

https://github.com/LearnerShape/lsgraph

Functionality added includes:

- Skill creation and graph modification
- Learning resource management
- User management
- Group creation and management
- Resource collections
- "Online" application of machine learning models

Existing functionality will also be moved and improved:

- Learning resource recommendation
- Job recommendation
- Workforce planning

LearnerShape

EdCast SkillsDNA

SkillsDNA™ Elements *
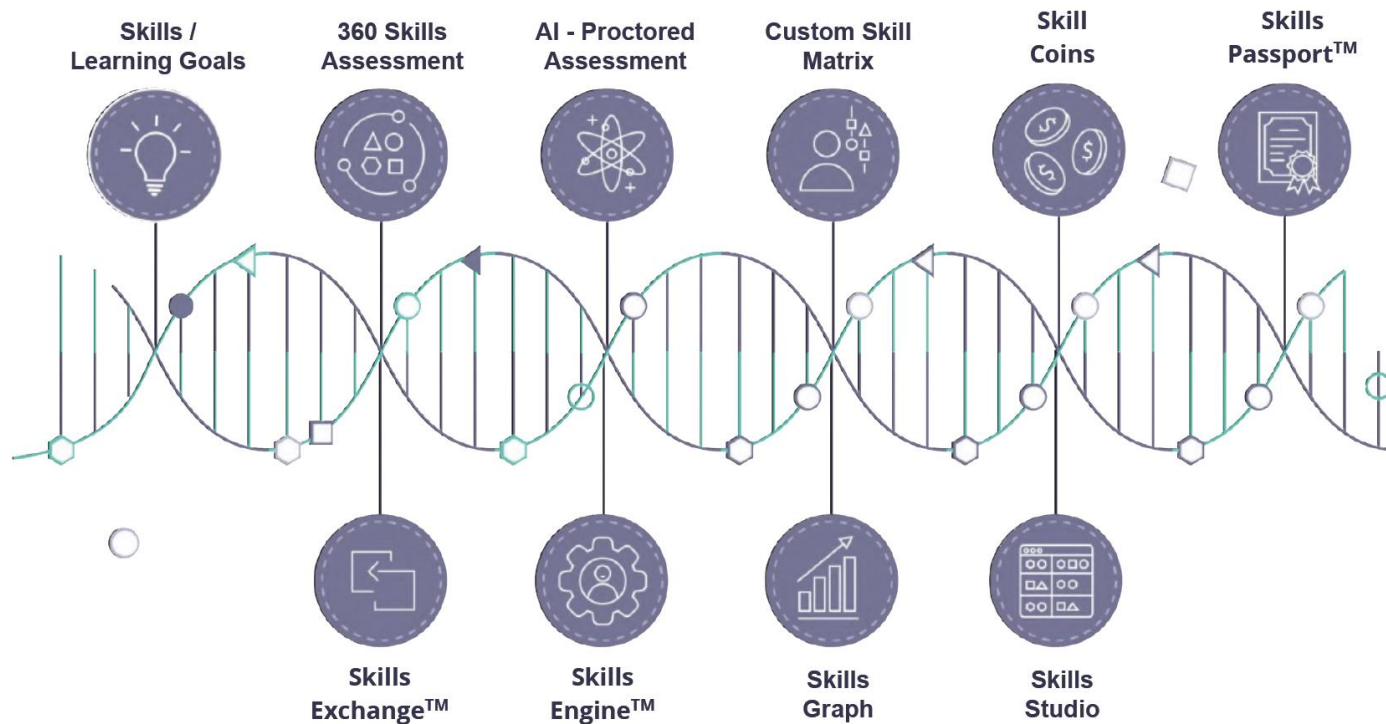
- Released 2021
- Extensible skills taxonomy – 15K skills, 5.5K roles
- "AI-proctored mappings across functions"
- https://www.edcast.com/corp/products/skillsdna/

Comments, Questions & Answers

FS Club

21

FS Club

Platinum Sponsors

Invest Northern Ireland · China Development Institute CDI 中国（深圳）综合开发研究院 · FINANCE MONTRÉAL · AIFC · Seoul Together we stand · Busan Finance Center · HK FINANCIAL SERVICES DEVELOPMENT COUNCIL 香港金融發展局

LuxembourgforFinance – Agency for the Development of the Financial Centre · ADGM AN INTERNATIONAL FINANCIAL CENTRE · Dubai International Financial Centre · THE GOVERNMENT OF MOSCOW – The Department for External Economic and International Relations of Moscow · GT Global Times Consulting

Gold Sponsors

Aptitude SOFTWARE · BRIDGEWORKS · FEATURE SPACE OUTSMART RISK · ARBORETUM · Crown Agents Bank · CERIDIAN · ENTRUST

Silver Sponsors

Bottomline · GPS global processing services · BCS CONSULTING Expect Excellence · P2 CONSULTING · The Technium Global SERVICE WITH INTEGRITY · expert.ai · CLOUDSOFT · PRAXITY Empowering Business Globally

Bronze Sponsors

Profile Software · (expleo) · CONTACT PARTNERS · alyne · ESTATES AND INFRASTRUCTURE EXCHANGE

Personal Sponsors

Challenge Curve · Currencycloud · worldpay · mastercard Catalina Consulting · RADIX · ZB · LEI GLOBAL LEGAL ENTITY IDENTIFIER FOUNDATION · cuff associates PART OF THEBES GROUP · Volanté · TRANSPARENCY TASK FORCE · CYGNETISE · AMSOM · GIBRALTAR STOCK EXCHANGE

Thank You For Listening

FS Club

Forthcoming Events

- Wed, 03 Nov (16:00-16:45)   Accounting Standards & Discount Rates In DB Pension Scheme Evaluation

- Tue, 09 Nov (15:00-15:45)   Where have All The £300k+ Jobs Gone? Challenging Presumptions Existing Within The Executive Job Search Arena

- Wed, 10 Nov (10:00-10:45)   Why British Tech Investors Fail And Americans Succeed: Time To Reinvent Futurology?

- Thu, 11 Nov (16:00-16:45)   Early Research: The Global Leading Indicator

Visit https://fsclub.zyen.com/events/forthcoming-events/

Watch past webinars https://www.youtube.com/zyengroup