

AI & Skills

Applied Machine Learning Days - EPFL

29.01.2020 - Isabelle Chappuis

Future Skills LAB

Unil

UNIL | Université de Lausanne
HEC Lausanne

What is a “SKILL” ?



Competences



Education

“Ability to
perform
in a given
job”

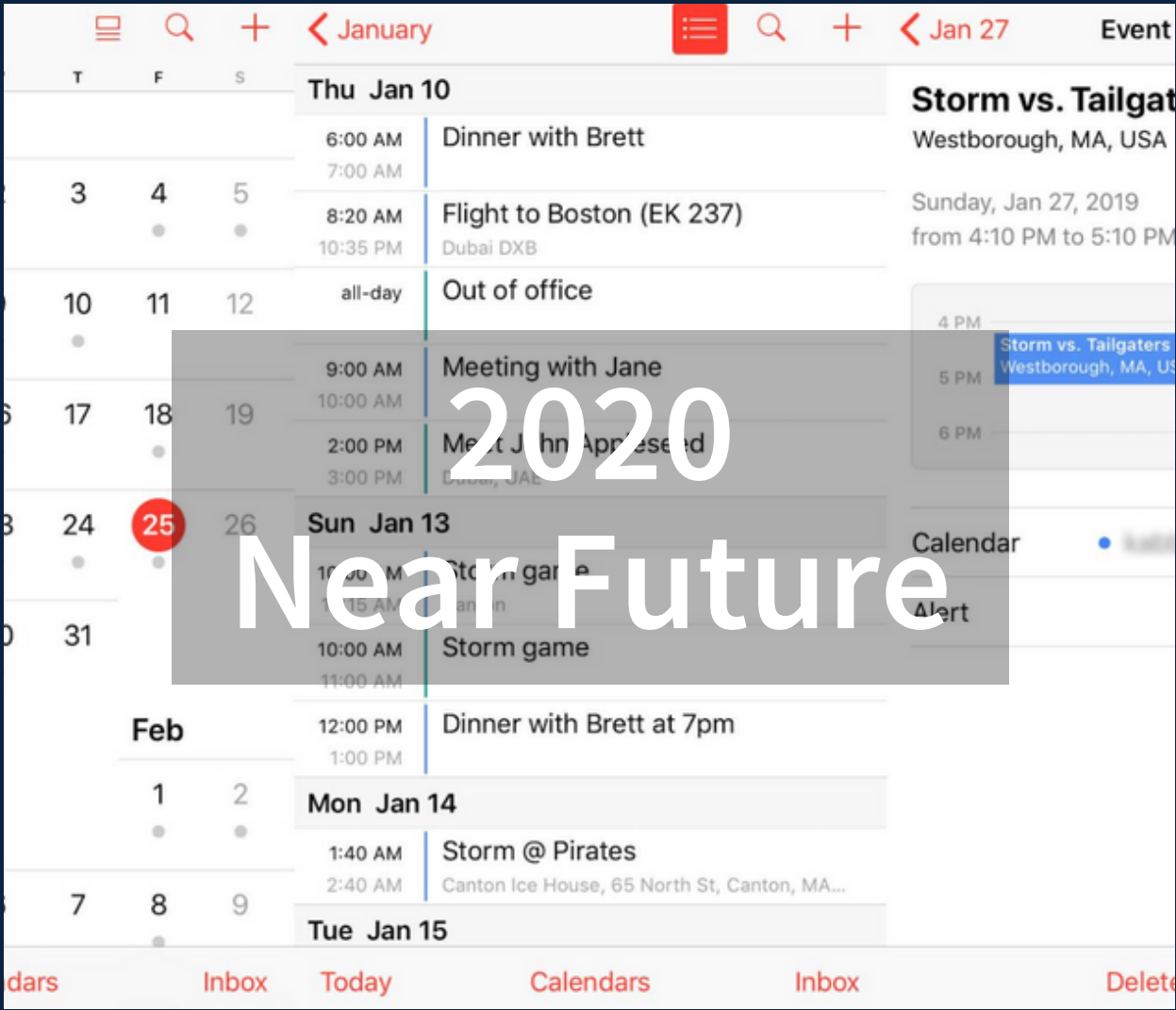


Knowledge



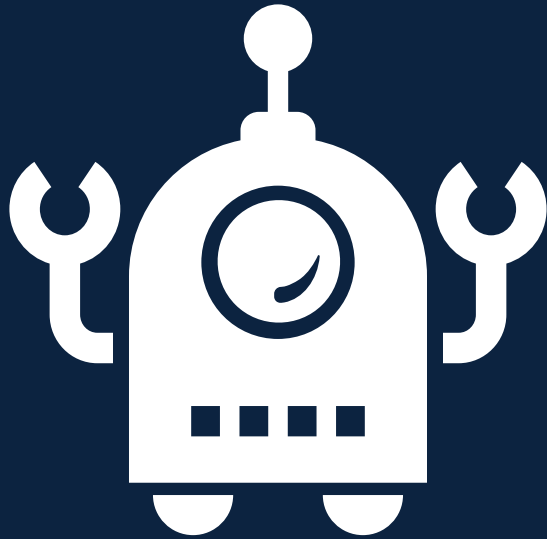
Experience

What is the “FUTURE” ?



(1) Near Future

Risk of robotization



Reorientation pathways



Risk of robotization



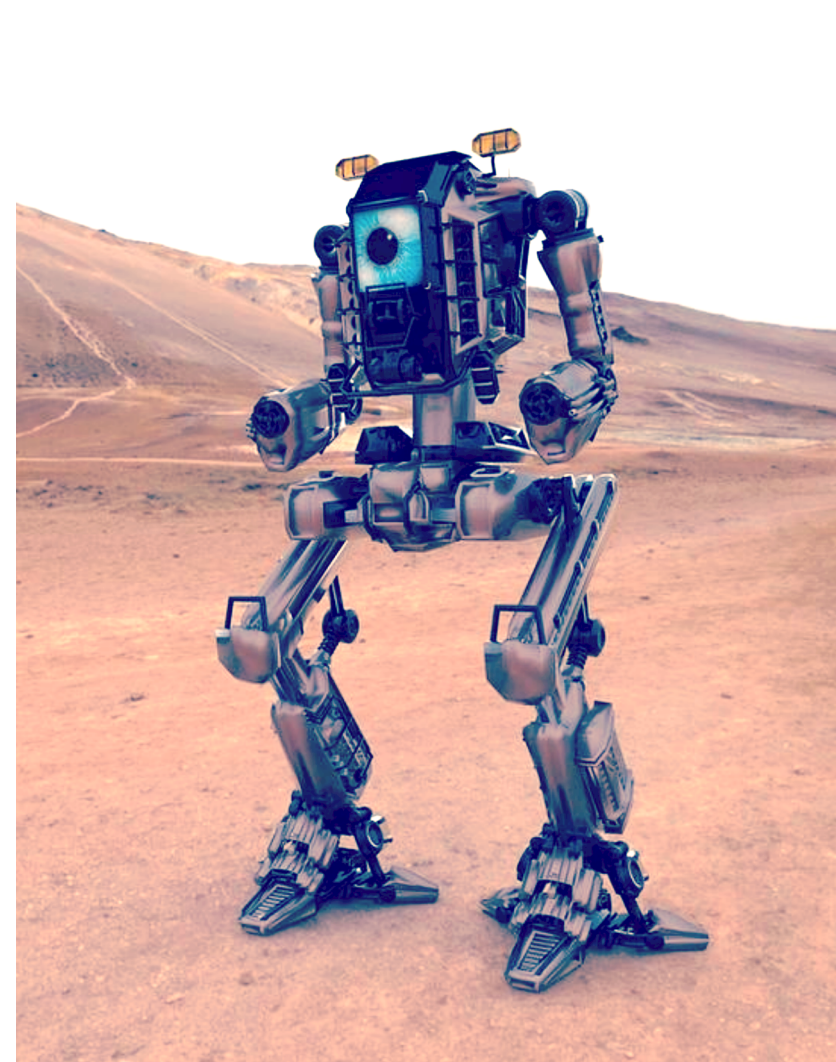
UNIL-EPFL Research project | human vs. machine capabilities | obsolescence calculator

Reorientation pathways based on skills



Algorithm to identify the shortest reskilling way towards a new robot-proof job

(2) Far Futures



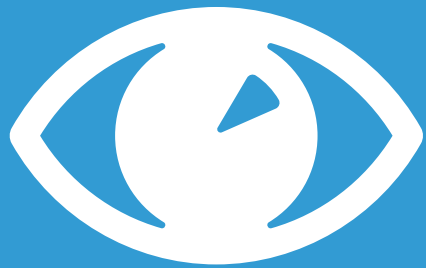
Why?

Natural inertia in the academia...

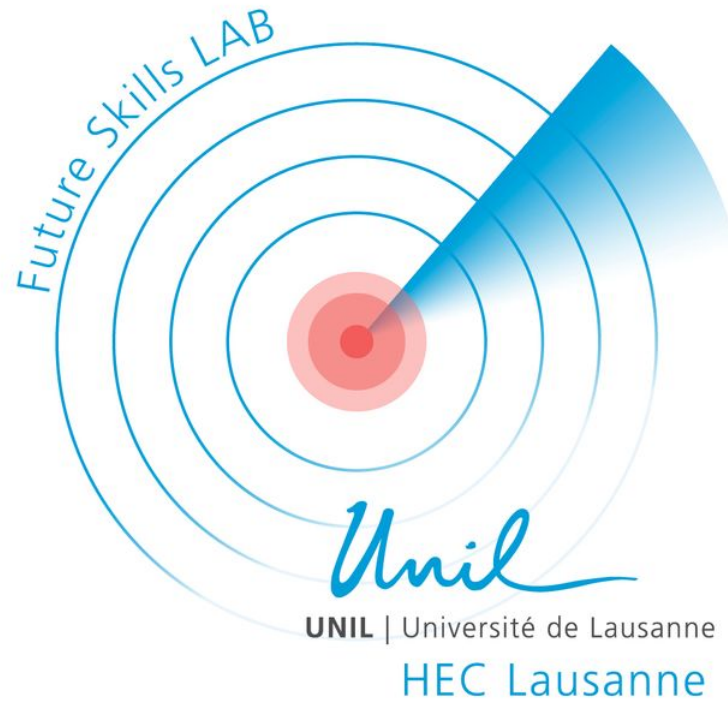
A large, white, sans-serif number '8' is centered on a solid blue background. The number is composed of two stacked circles, with the top circle slightly smaller than the bottom one. The background is a uniform, medium-blue color.

How ?

Future Skills Lab's Methodology



Foresight



Skills

**“It is more important to out-think
your enemy, than to outfight him”**

Sun Tzu

Our Speakers today

AI & Skills from the learners & educators' perspectives



Mara Pasquali

Advisor in Marketing and Communications

@ Independant



Frédéric Baffou

Senior Lead Consultant Digital Strategy

@ Antaes Consulting



Pierre Vandergheynst

Vice-Presidence Education

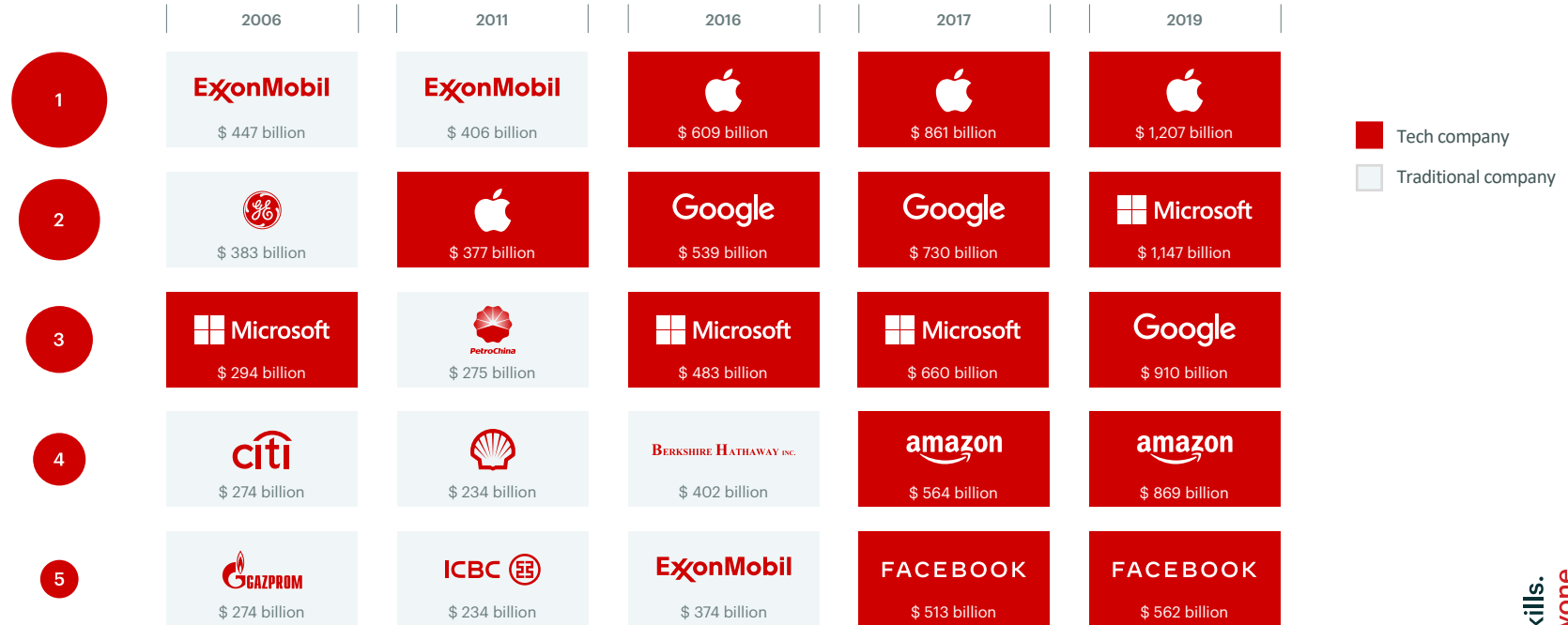
@ EPFL

The New Way of Getting Digital Skills

Digital Summit Switzerland
26 November 2019

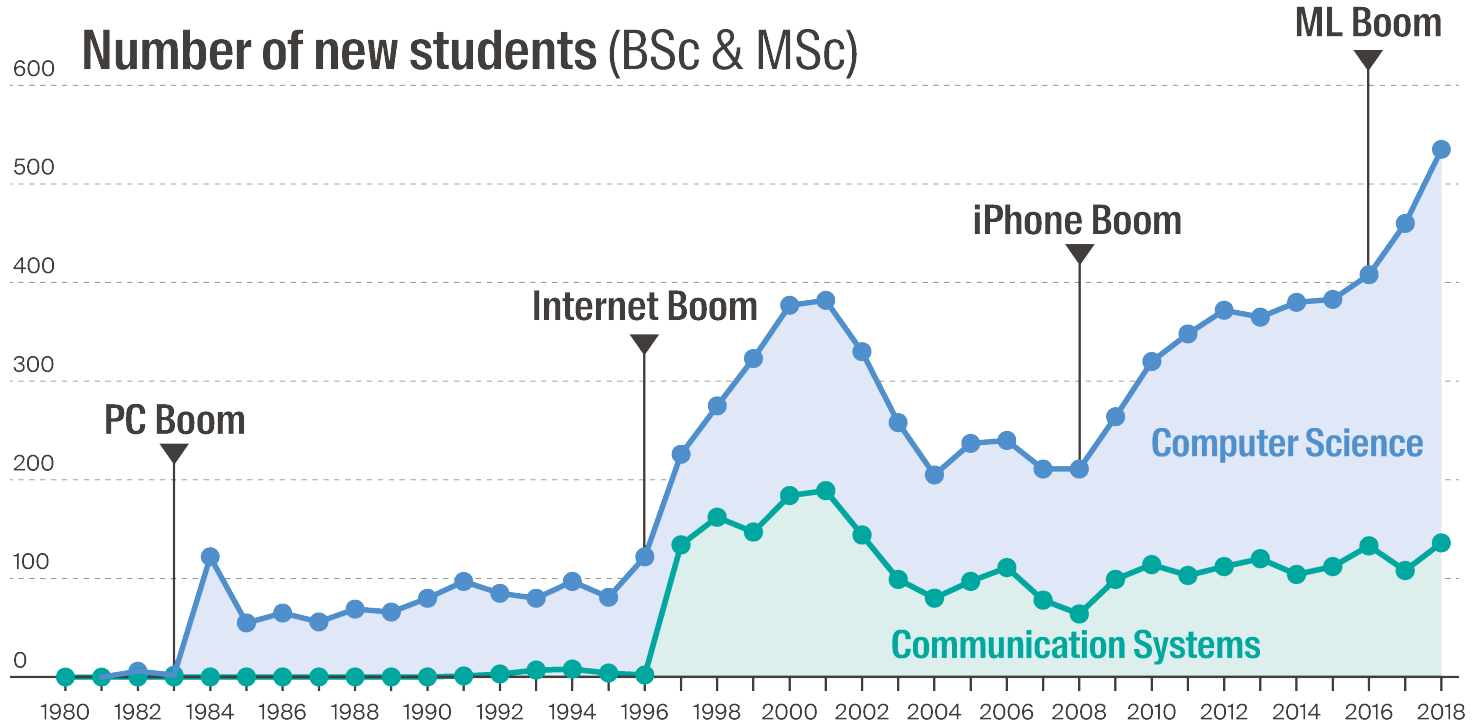
The Great Tech Transformation

Most valuable companies by market cap



Note: Valuation based on data from December 31st of the respective year; valuation for 2019 as at November 19th, 2019
Source: morningstar.com, Financial Times, Bloomberg, Statista Digital Market Outlook - Report from Statista – Digital Economy Compass 2019

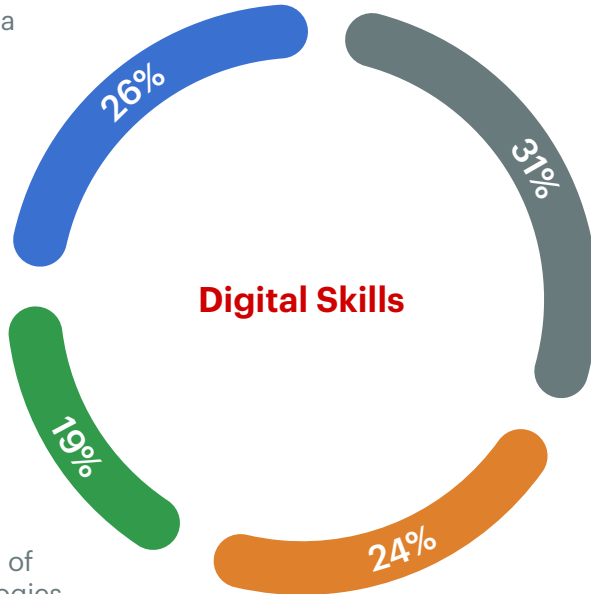
The Transformation Has a Cause: Trained Experts



The Transformation Creates a Need: Trained Employees

Foundational

Basic digital and data analysis skills considered a plus



Basic or none

Pack Office or no requirement

Intermediate

Solid understanding of information technologies is must have

Advanced

Proficiency in one or more programming languages mandatory

¹Study performed on latest Glassdoor.ch job posting in Geneva area with a non pre-used account

The EPFL Extension School is **Pioneering a New Model**

- + World class courses
- + Fully online
- + Personal, 1-on-1 support
- + Potentially leading to an EPFL diploma
- + No academic prerequisites

Courses & programs

Our courses are designed to provide deep, effective training that move you from digital dabbler into the level of knowledge and expertise required to keep you relevant in your current and future roles.

Beginner Course

50 Things You Need to Know About the Internet

150 hours

Beginner Course

Foundations of Data Science

150 hours

Beginner Course

Thinking and Creating with Code

150 hours

Advanced Course

UI Development with React.js

75 hours

Intermediate Program

Applied Data Science: Machine Learning

450 hours | EPFL Diploma

Intermediate Program

Web Application Development

450 hours | EPFL Diploma

Intermediate Program

Applied Data Science: Communication & Visualization

450 hours | EPFL Diploma

One-to-One Personalized Support

The screenshot shows a Jupyter Notebook interface with the following content:

```
File Edit View Insert Cell Kernel Widgets Help
+ - - - - - Run - - - - - Code

O2 Solution - MNIST multilayer
localhost:8888/notebooks/jupyter-program/4-m2/08%20-%20multil%20and%20...

Visualize weights
Exercise: Plot the weights from the first fully connected layer.

In [15]: # Create a grid of subplots
fig, axes = plt.subplots(nrows=8, ncols=8,
                        # Remove gaps between subplots
                        plt.subplots_adjust(wspace=0, hspace=0)

# Plot the weights of the 64 hidden units
for i, axis in enumerate(axes.flatten()):
    # Get weights of i-th hidden unit
    weights = weights_hidden[:, i]
    weights -= weights.min()
    weights /= weights.max()

# Plot weights
axis.imshow(weights.reshape(28, 28), cmap=plt.cm.viridis)
axis.get_xaxis().set_visible(False) # Disable x-axis
axis.get_yaxis().set_visible(False) # Disable y-axis

plt.show()
```

Below the code, a 8x8 grid of small heatmaps is displayed, each representing the weights of a hidden unit in the network.

The screenshot shows a video meeting interface with the following elements:

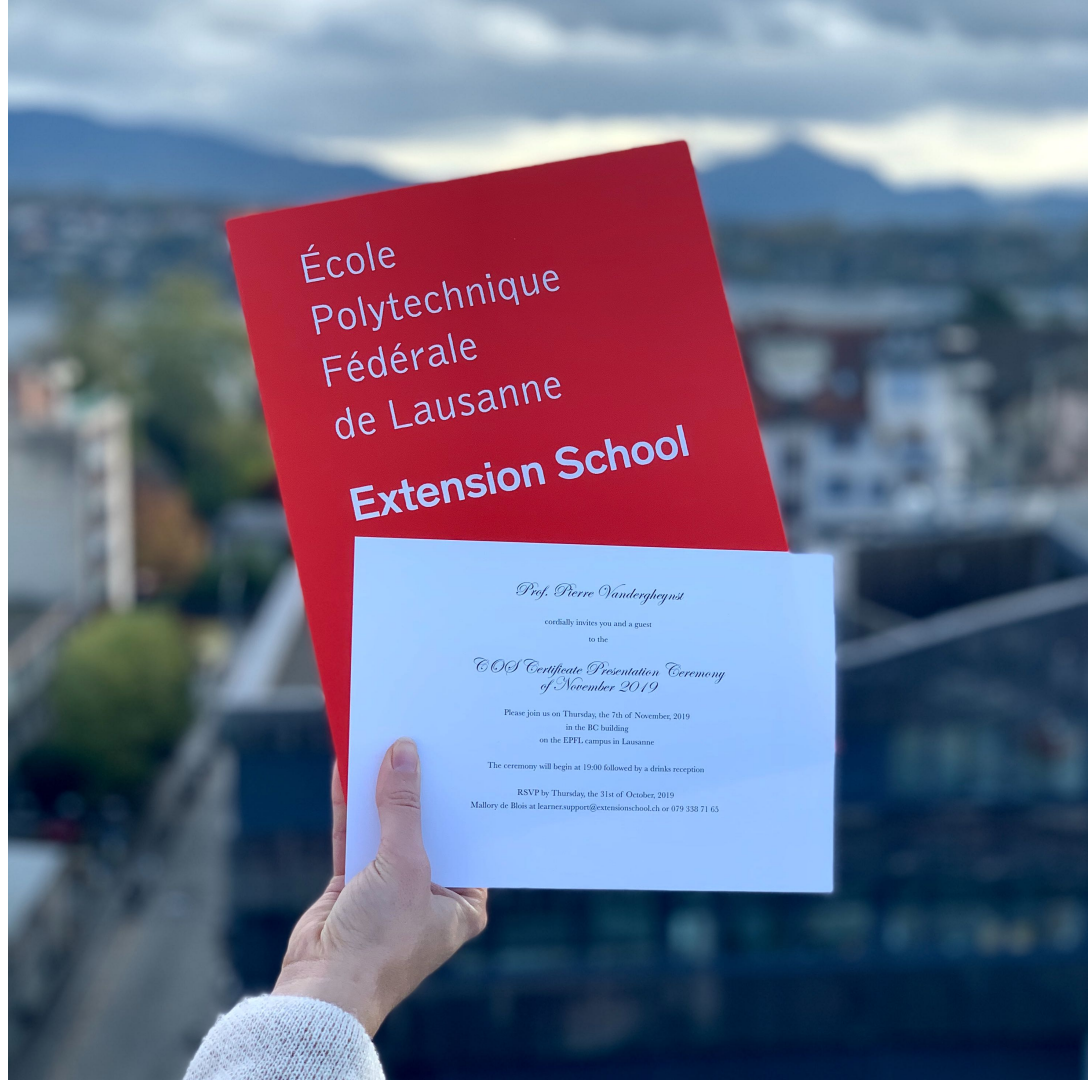
- Browser address bar: `whereby.com/exts1`
- Meeting controls: Room size, Cam/Mic, Locked, Settings
- Participant names: Michael Notter, Christian Lübke
- Meeting actions: Help, Share screen, Mic off, Cam off, Close chat, Leave
- Chat area: 1026, Michael Notter, Christian Lübke, Thanks
- Chat content: "Here's a link for more detailed information: https://scikit-learn.org/stable/modules/linear_model.html"

A small inset video feed showing a close-up of Christian Lübke, who is smiling and wearing a headset.

EPFL COS

Certificate of Open Studies

- + No academic prerequisites
- + Unique in Switzerland



École
Polytechnique
Fédérale
de Lausanne
Extension School

Prof. Pierre Vandergheynst

cordially invites you and a guest
to the

*COS Certificate Presentation Ceremony
of November 2019*

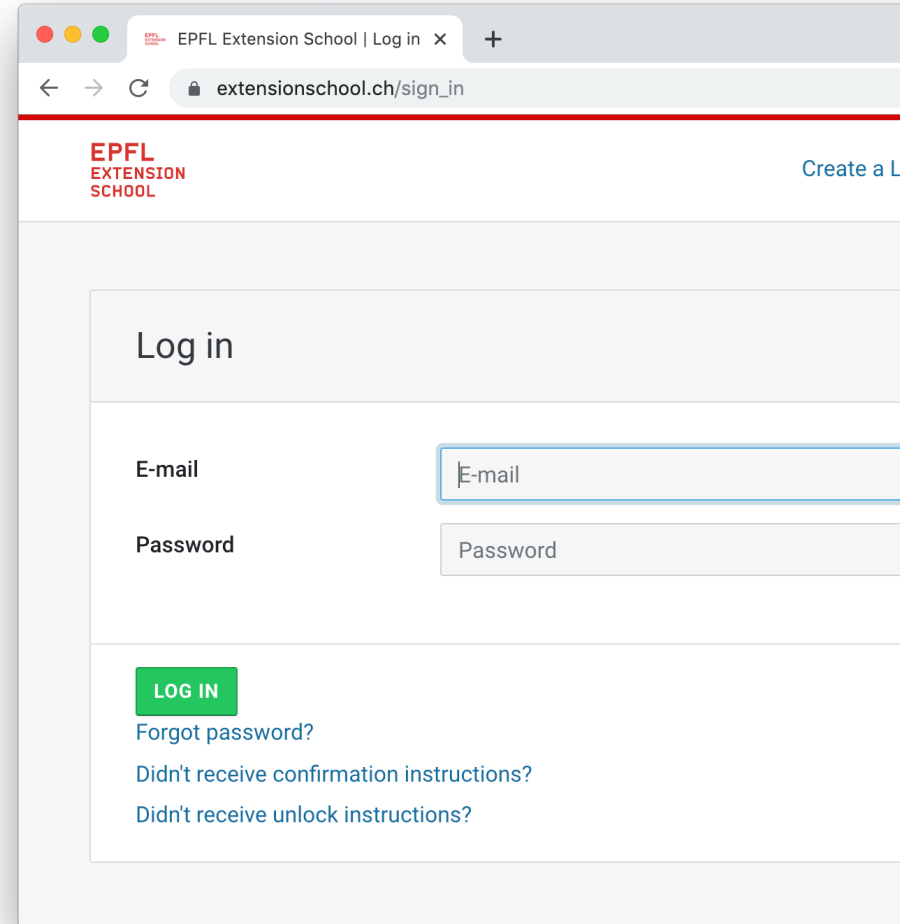
Please join us on Thursday, the 7th of November, 2019
in the BC building
on the EPFL campus in Lausanne

The ceremony will begin at 19:00 followed by a drinks reception

RSVP by Thursday, the 31st of October, 2019
Mallory de Bois at learner-support@extensionschool.ch or 079 338 21 63

We Built Our Own Platform

- + We control the data
- + We don't need to monetize learners' data
- + We don't sell your employees
- + We can iterate very rapidly



Our Learners

Work at Your Company

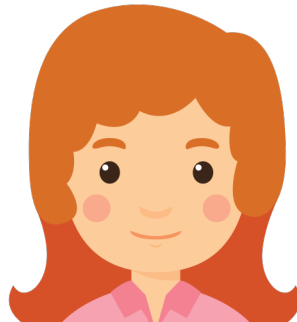
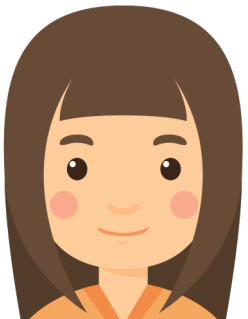


What They Say

Learners' Feedback

My models are able to increase the accuracy of our production line by 2-3%, a clear cost reduction opportunity for my company.— J.C.

"I have done many courses, even with the big tech companies, but yours are incomparable. I have never before done an online course with this level of quality, ever."
— J. K.



What They Say

Learners' Feedback

Before I started the courses, the Internet was just a given, like a light switch that you can turn on. Now I understand how it really works and I can see the opportunities.

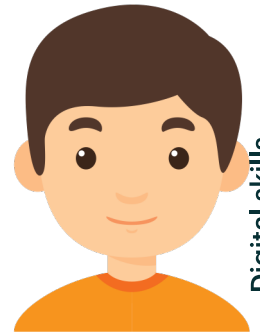
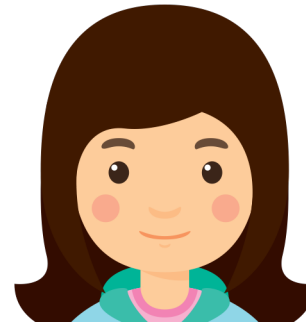
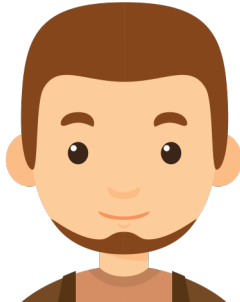
— L. R.

As a new mother who is working 80%, self-paced learning is perfect for me. I can work while my baby sleeps.

— A. F.

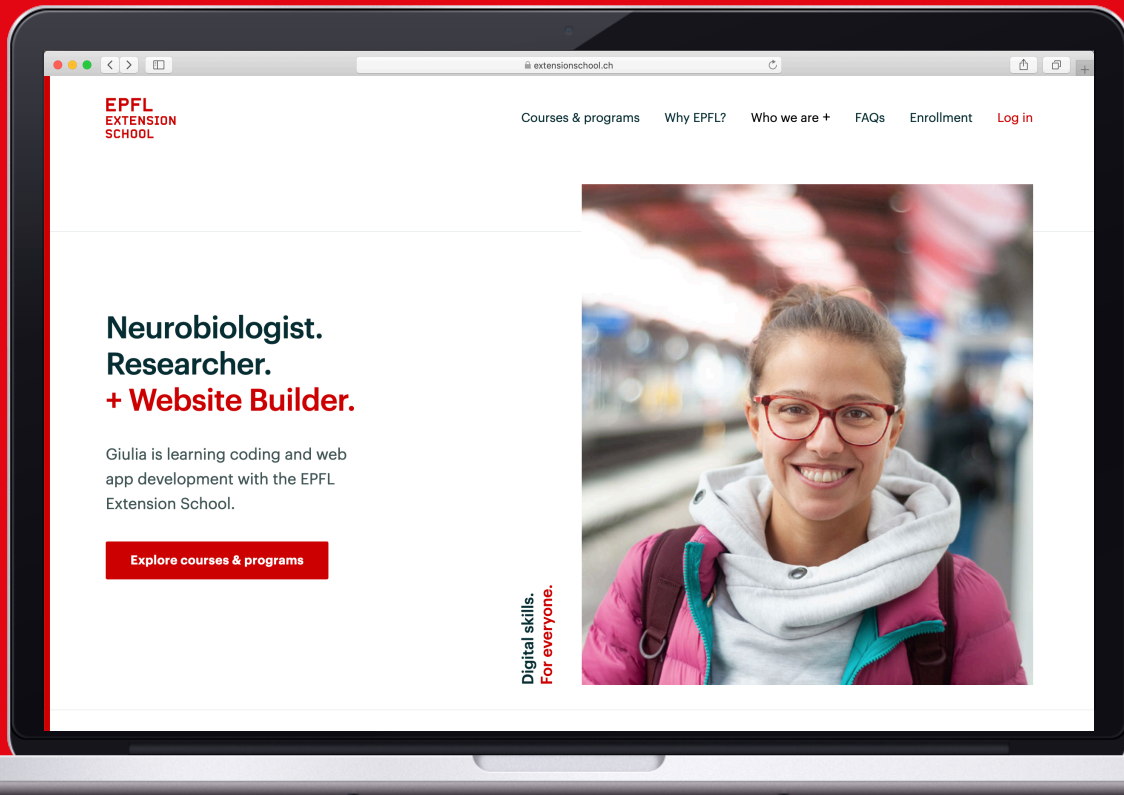
Before, I didn't have the permission or confidence to call myself a Data Scientist, even though I had studied at one of the most renowned universities in the world.

— V. M.



**Swiss.
Neutral.
High Quality.
Applied.
Cutting Edge.
Certified.**





extensionschool.ch

Thank you.

Marcel Salathé
Academic Director
EPFL Extension School