Industry Certificates

Preparation for the Exam AI-900: Microsoft Azure AI Fundamentals

Instructors:
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Facutly of Informatics*, University of Debrecen

*Faculty of Informatics is a Microsoft AI Centre from 2019

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Value of Industry Certificates

„They’re looking for reasons to hire candidates ...

if they see anything that’s relevant to their industry, to their company, to the specific position, it’s definitely going to help to make that candidate more attractive.”

(Tim Gates, Adecco Staffing, Senior Regional Vice President)

(source: www.certiport.com)

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Industry Certificates – Key Benefits

- Validation of knowledge
- Increased marketability
- Increased earning power
- Enhanced academic performance
- Improved reputation
- Enhanced credibility
- Increased confidence
- Respect from peers

(source: www.certiport.com)

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Industry Certificates – Improve Academic Performance

- **Higher grade point average for certified high school students: 3.12 vs 2.78 (4.0 scale)**
- **Higher graduation rates for certified high school students: 97.5% vs 78.4%**
- **Increased post-secondary enrollment: 84% vs 82%**
- **Reduced dropout rates: 0.2% vs 1.0%**

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(source: www.certiport.com)

Industry Certificates – Advantages to Professionals

- IT professionals with certifications have an average salary of $111,334, 7% more than non-certified professionals
- IT professionals who gained new skills and/or certifications last year received an average raise of $12,000-$13,000
- 91% of hiring managers report certification is an important criterion for hiring
- Certification makes job candidates stand out in a crowded job market
- Certification makes a better case for that big raise or promotion
- Third-party validation of skills is far more powerful than self-promotion of knowledge

(source: www.certiport.com)

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Industry Certificates – Faculty of Informatics

- Validating course materials with our industrial partners
- Validating available industry certificates with our industrial partners (are they indeed valuable?)

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Industry Certificates – Faculty of Informatics

- Setting up an authorized testing center(s)
- Integrating certificate materials into our courses
- Offering very economic exam possibilities to our students
- Motivating our students to gain industry certificates (grants, mentoring, special college enrollment, counting certificates in our regular courses,…)
- Motivating our lecturers to gain industry certificates

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Industry Certificates – CERTIPORT

(source: https://www.youtube.com/watch?v=UawNsGhILWk)

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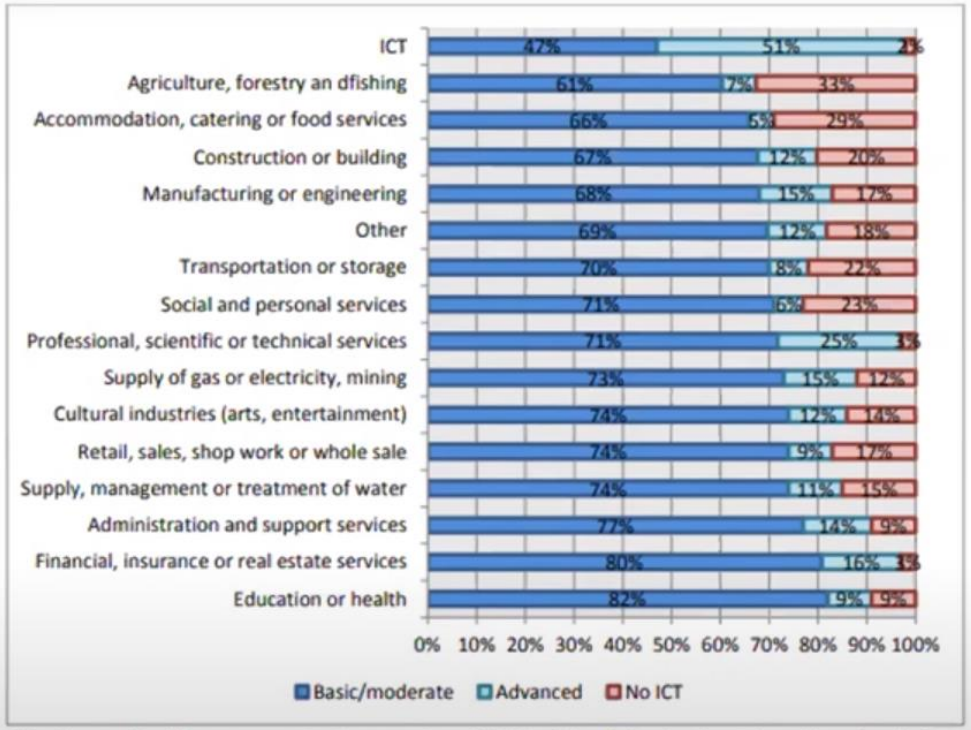
Industry Certificates – CERTIPORT



NB: Share of valid responses to the question: Which of the following best describes the highest level of information communication technology (ICT) skills required for doing your job?
Source: Cedefop European skills and jobs survey.

LEARN | PRACTICE | CERTIFY

CERTIPORT

(source: https://www.youtube.com/watch?v=UawNsGhILWk)

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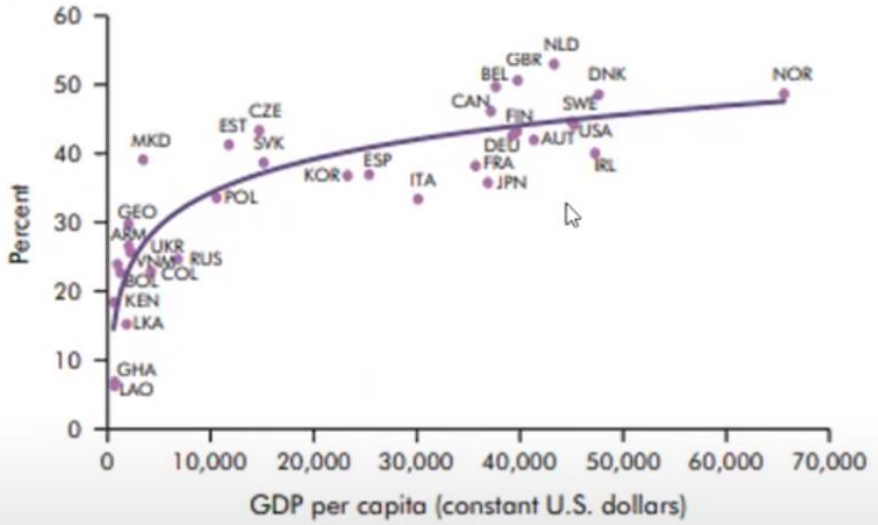
Industry Certificates – CERTIPORT

Figure 2.19 Employment becomes more intensive in ICT use as economies grow

Share of employment in high-ICT-intensity occupations, circa 2013



Source: Monroy-Taborda, Moreno, and Santos, forthcoming, for the WDR 2016, based on STEP (World Bank, various years), PIAAC household surveys, and World Development Indicators (World Bank, various years). Data at http://bit.do/WDR2016-Fig2_19.

Note: GDP = gross domestic product; ICT = information and communication technology; PIAAC = Programme for the International Assessment of Adult Competencies.

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(source: https://www.youtube.com/watch?v=UawNsGhILWk)

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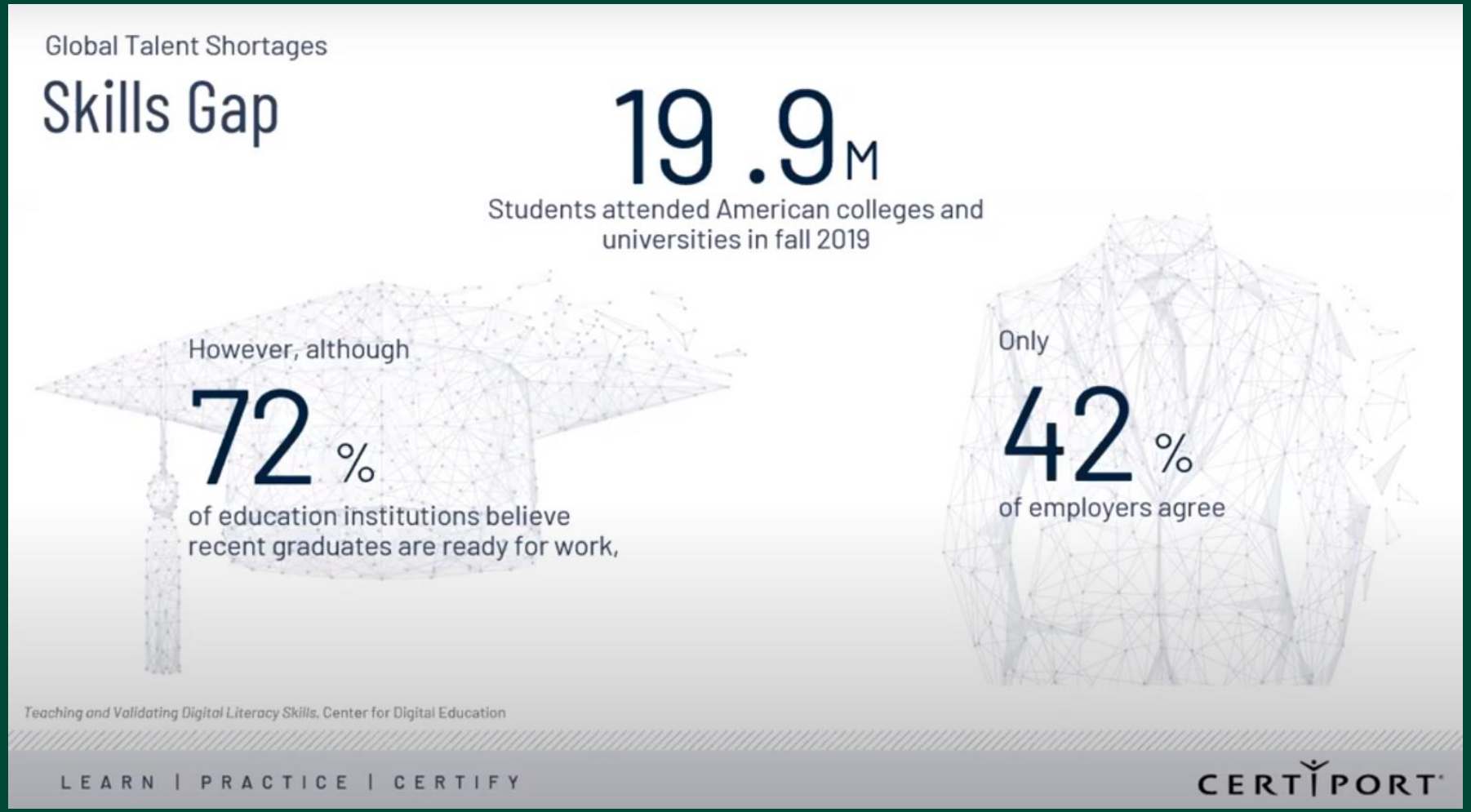

(source: https://www.youtube.com/watch?v=UawNsGhILWk)

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WORLD ECONOMIC FORUM

	Number of opportunities (per 10,000)	
Professional Cluster	**2020**	**2022**
figures extrapolated from data for 20 economies (LinkedIn)		
Data and AI	78	123
Engineering and Cloud Computing	60	91
People and Culture	47	58
Product Development	32	44
Sales, Marketing and Content	87	125
figures extrapolated from data for the United States (Burning Glass)		
Care Economy	193	260
Green Economy	9	14
ALL CLUSTERS	**506**	**715**

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(source: https://www.youtube.com/watch?v=UawNsGhILWk)

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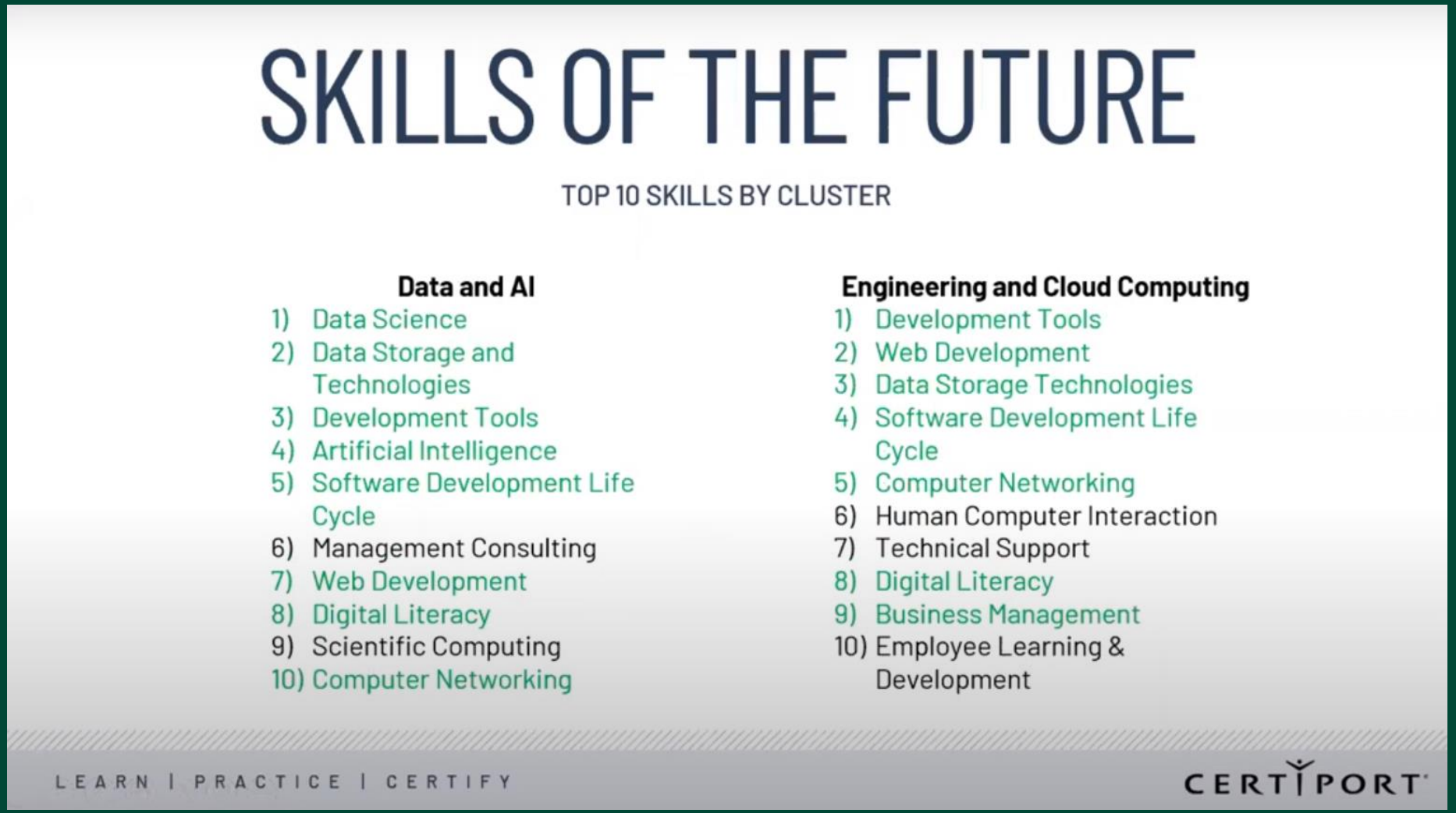

(source: https://www.youtube.com/watch?v=UawNsGhILWk)

Industry Certificates – CERTIPORT (for later use)

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(source: https://www.youtube.com/watch?v=UawNsGhILWk)

CERTIPORT Authorized Testing Center – Faculty of Informatics

inf.unideb.hu/hu/certiport
inf.unideb.hu/en/certiport

For both:

- **Higher Education**
- **Business**

CERTIPORT
AUTHORIZED TESTING CENTER

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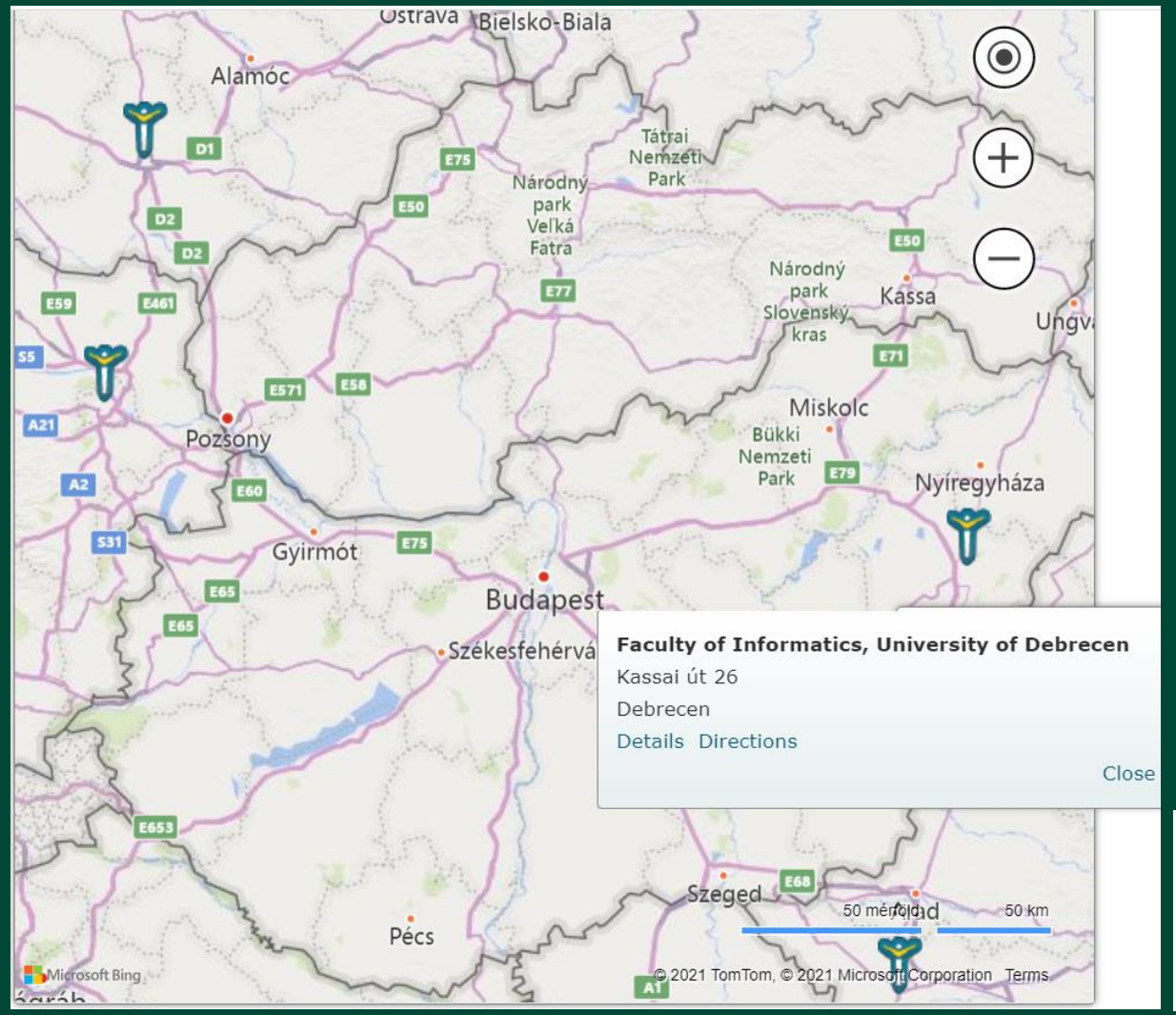
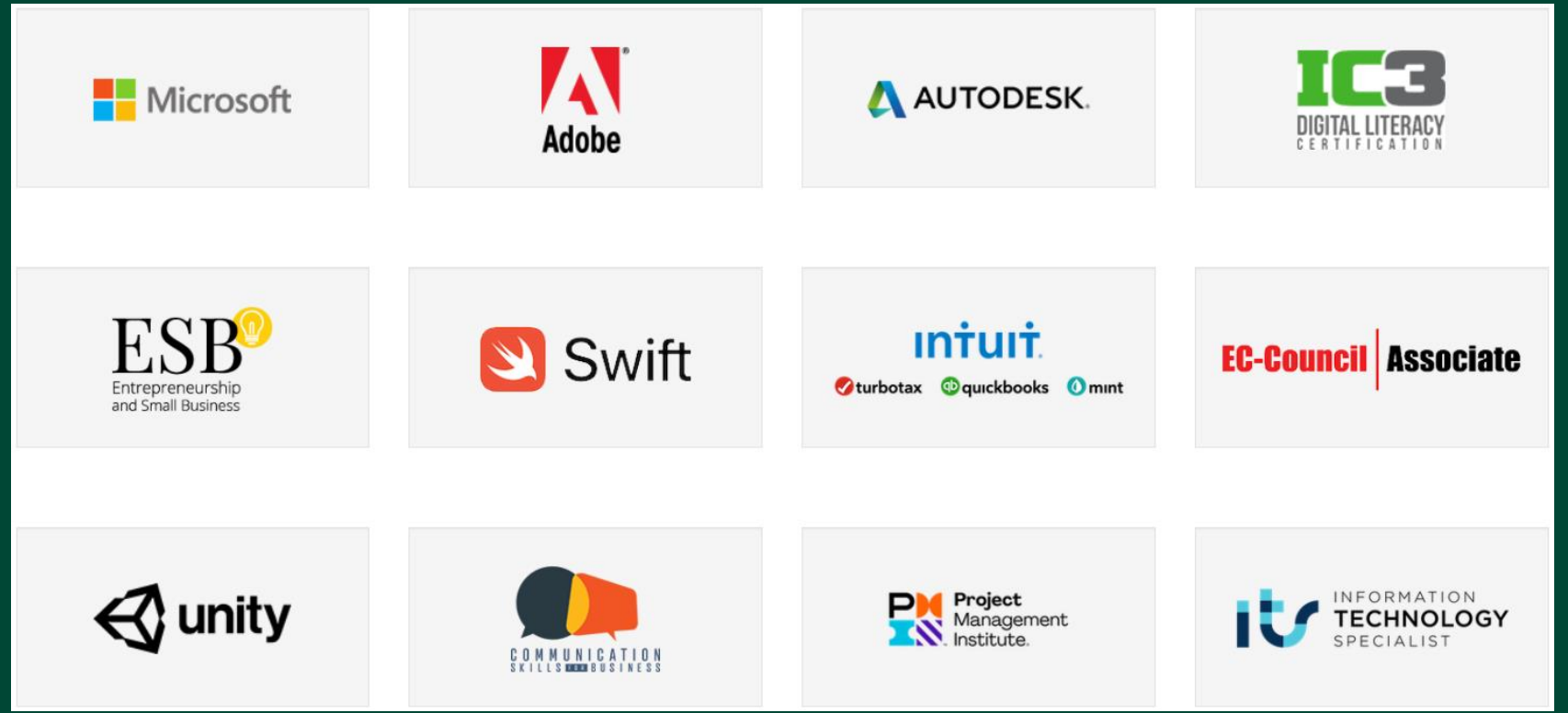


CERTIPORT Certificates

Select a Program

- Select a Program
- Adobe Certified Professional
- App Development with Swift Certification
- Autodesk Certified Professional
- Autodesk Certified User
- Communication Skills for Business
- EC-Council Associate
- Entrepreneurship and Small Business
- IC3 Digital Literacy Certification
- Information Technology Specialist
- Intuit Certifications
- Microsoft Certified Educator
- Microsoft Certified Fundamentals
- Microsoft Office Specialist
- Microsoft Technology Associate
- Project Management Institute
- Unity Certified User
- VBA Expert



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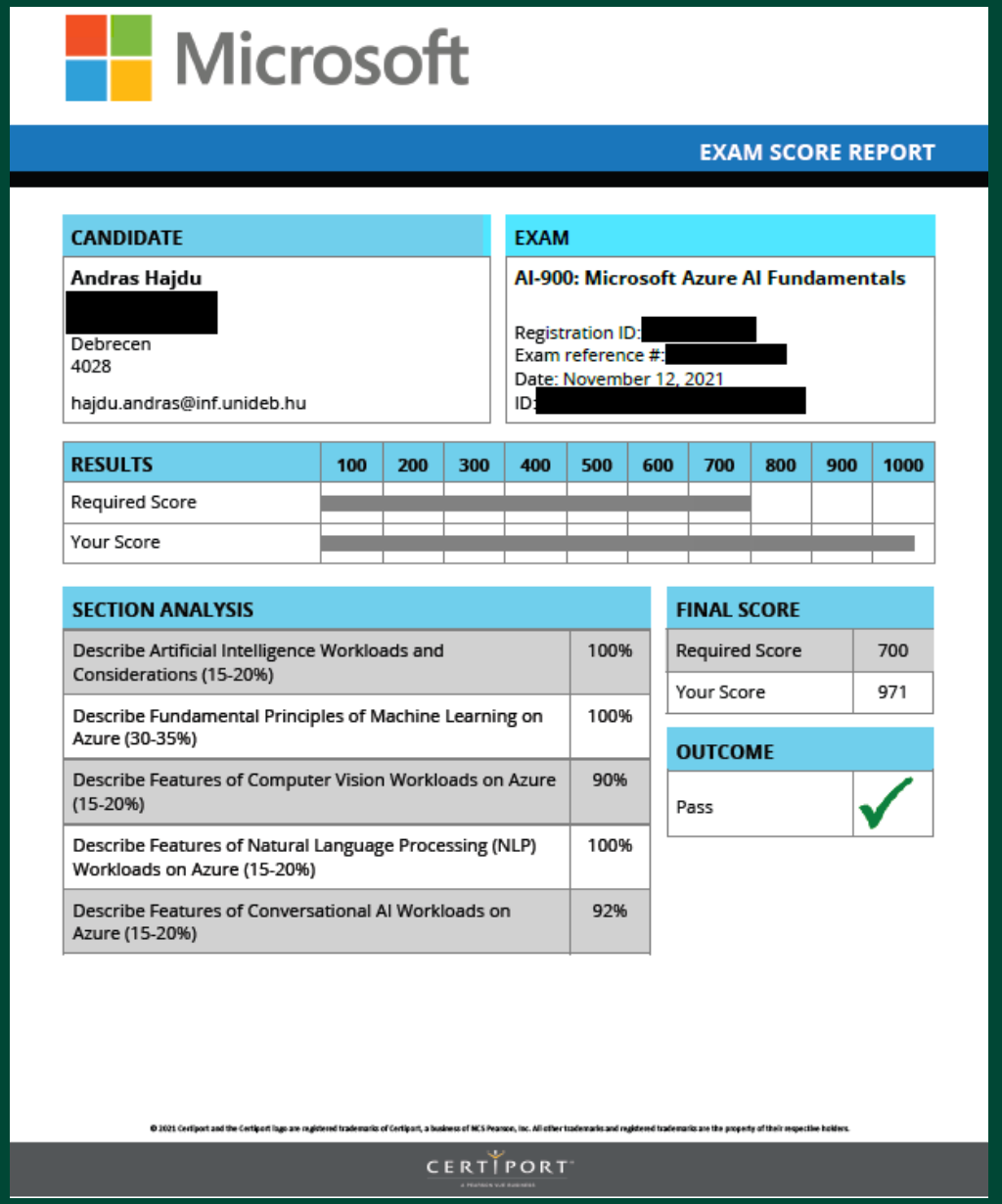
Microsoft Azure AI Fundamentals (AI-900TOO) Exam

- **Faculty of Informatics is a Microsoft AI Centre from 2019**
- **Instructors are experienced AI lecturers/researchers**
- **Personal, proctored(!) environment**



Microsoft

EXAM SCORE REPORT

CANDIDATE	EXAM
Andras Hajdu [redacted] Debrecen 4028 hajdu.andras@inf.unideb.hu	AI-900: Microsoft Azure AI Fundamentals Registration ID: [redacted] Exam reference #: [redacted] Date: November 12, 2021 ID: [redacted]

RESULTS	100	200	300	400	500	600	700	800	900	1000
Required Score										
Your Score										

SECTION ANALYSIS	
Describe Artificial Intelligence Workloads and Considerations (15-20%)	100%
Describe Fundamental Principles of Machine Learning on Azure (30-35%)	100%
Describe Features of Computer Vision Workloads on Azure (15-20%)	90%
Describe Features of Natural Language Processing (NLP) Workloads on Azure (15-20%)	100%
Describe Features of Conversational AI Workloads on Azure (15-20%)	92%

FINAL SCORE	
Required Score	700
Your Score	971

OUTCOME	
Pass	✓

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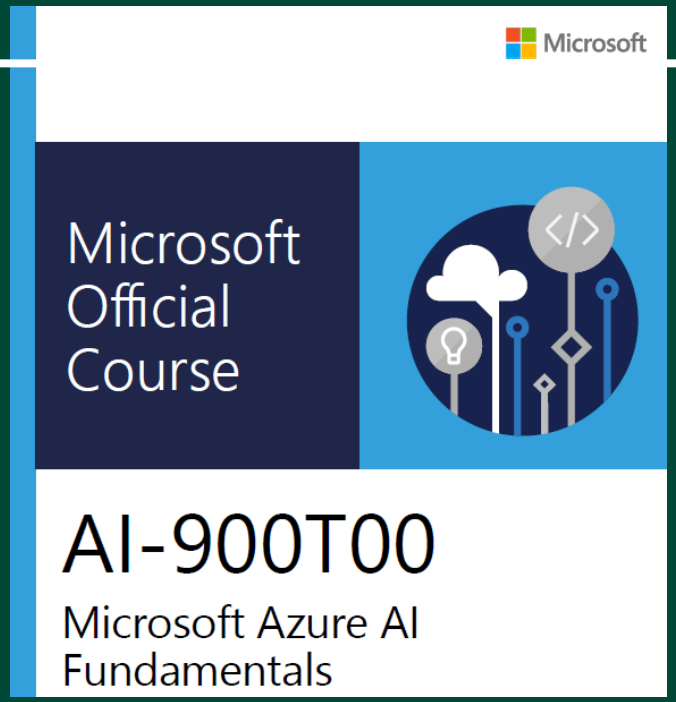
AI-900 Exam Preparation Materials

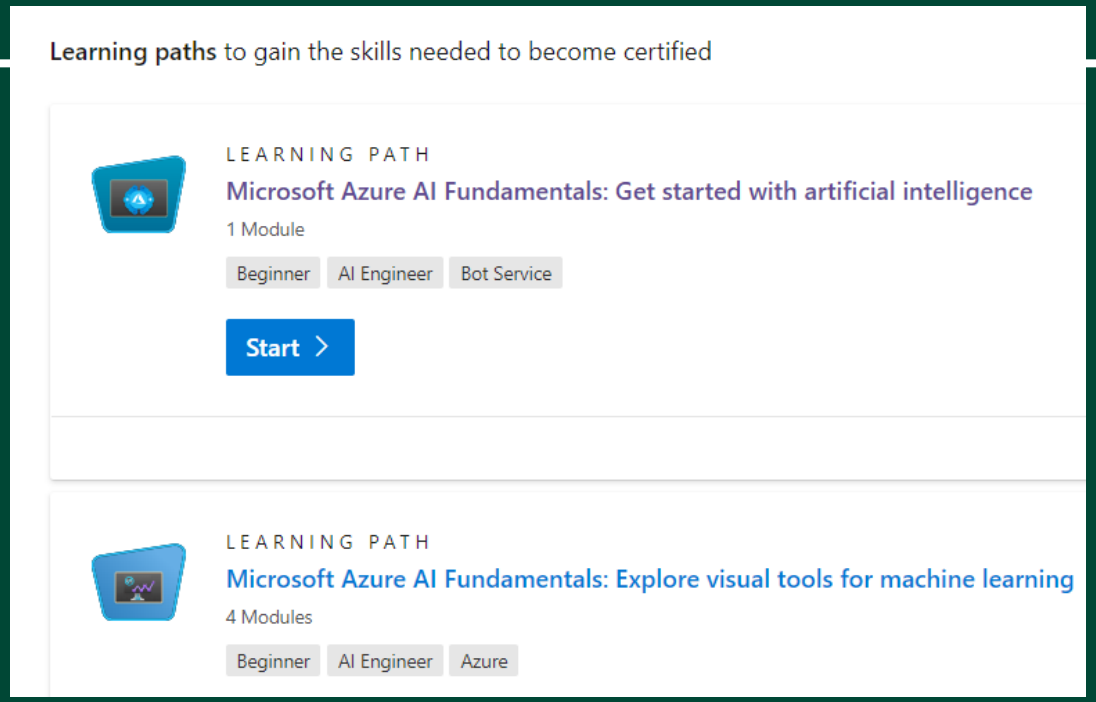
Preparation Lectures

- based on Instructors' Handbook as single PDF, which is not available directly for students



Learning Paths for Studens

- Basically equivalent with Instructors' Handbook
- Available at: https://docs.microsoft.com/en-us/learn/certifications/exams/ai-900



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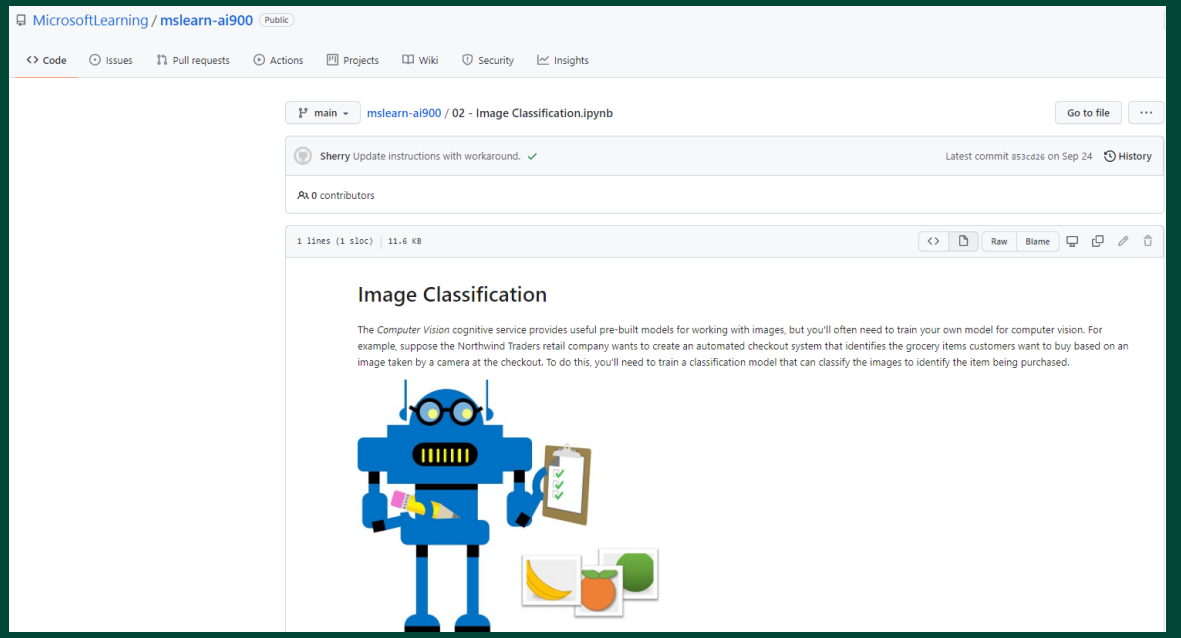
AI-900 Exam Preparation Materials

- **Lab Excersises on Github (Tutorials as Jupyter Notebooks, Python)**

- **Tutorial Videos by Instructors**

  - **Lab Excersises (Domain Knowledge, Deployment of AI Services in Azure)**

  - **MS Azure Fundamentals* (Signing In, Student Credits, Resources)**
    *** Thanks to Prof. Tamás Bérczes**



1. Run the code cell below by clicking the **Run cell** (▷) button (to the left of the cell) to set the variables to your project ID, key, and endpoint values.

In [ ]:

```
project_id = 'YOUR_PROJECT_ID'
cv_key = 'YOUR_KEY'
cv_endpoint = 'YOUR_ENDPOINT'

model_name = 'groceries' # this must match the model name you set when publishing your model iteration (it's case-sensitive)!
print('Ready to predict using model {} in project {}'.format(model_name, project_id))
```

Now you can use your key and endpoint with a Custom Vision client to connect to your custom vision classification model.

Run the following code cell to classifiy a selection of test images using your published model.

> **Note**: Don't worry too much about the details of the code. It uses the Computer Vision SDK for Python to get a class prediction for each image in the /data/image-classification/test-fruit folder

In [ ]:

```
from azure.cognitiveservices.vision.customvision.prediction import CustomVisionPredictionClient
from msrest.authentication import ApiKeyCredentials
import matplotlib.pyplot as plt
```

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Preparation Materials (what is needed?)

- **Preparation Lectures -> very useful to successfully pass the exam**
- **Learning Paths for Students, module description slides -> critical to pass the exam**
- **Lab Excersises on Github -> less critical to pass, but very useful for later AI activities**
- **Tutorial Videos by Instructors**
  - **Lab Excersises (Domain Knowledge) -> very useful to successfully pass the exam**
  - **Lab Excersises (Deployment of AI Services in Azure) -> less critical to pass, but very useful for later AI activities**
  - **Lab Excersises (Python coding) -> not critical to pass, but very useful for later AI activities**
  - **MS Azure Fundamentals (Signing In, Student Credits, Resources) -> not part of the exam, but needed to setup MS Azure**

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Possibility for Test Exams as a Preparation

- **A very(!) useful possibility for those enrolling to the exam is to have access to test exams**
- **Test exams has similar (not the same!) questions than the real one**

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How to enroll to the exam?

- Everywhere use your …@mailbox.unideb.hu account!!!
  (in MS Azure for preparations you can use other accounts, but it is not related to the official exam)
- Visit the Faculty CERTIPORT web page (https://inf.unideb.hu/hu/certiport or https://inf.unideb.hu/en/certiport) and enroll there to the AI-900 exam via the corresponding form
- After that you will receive information on accessing the preparation materials and how to register to certiport.com and to the portal of test exams, and also regarding the possible exam dates.
- Enrollment is open at any time! (e.g. not mandatory to participate on the preparation lectures)

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Technical Information about the Exam

- **All the information is available at www.inf.unideb.hu/en/certiport, but**
  - **Price of the exam is much(-much) lower than on the market (we aimed to make it available for low budget persons as well)**
  - **Preparation is for free for Faculty students/members**
  - **Passing the exam successfully will be rewarded by some reimbursement from the pre-paid exam price (no reimbursement in case of failure!)**
  - **In case of failure retake is possible with the same conditions**
- **You have to prepare a quize-like exam (~35-45 questions, ~45 minutes)**

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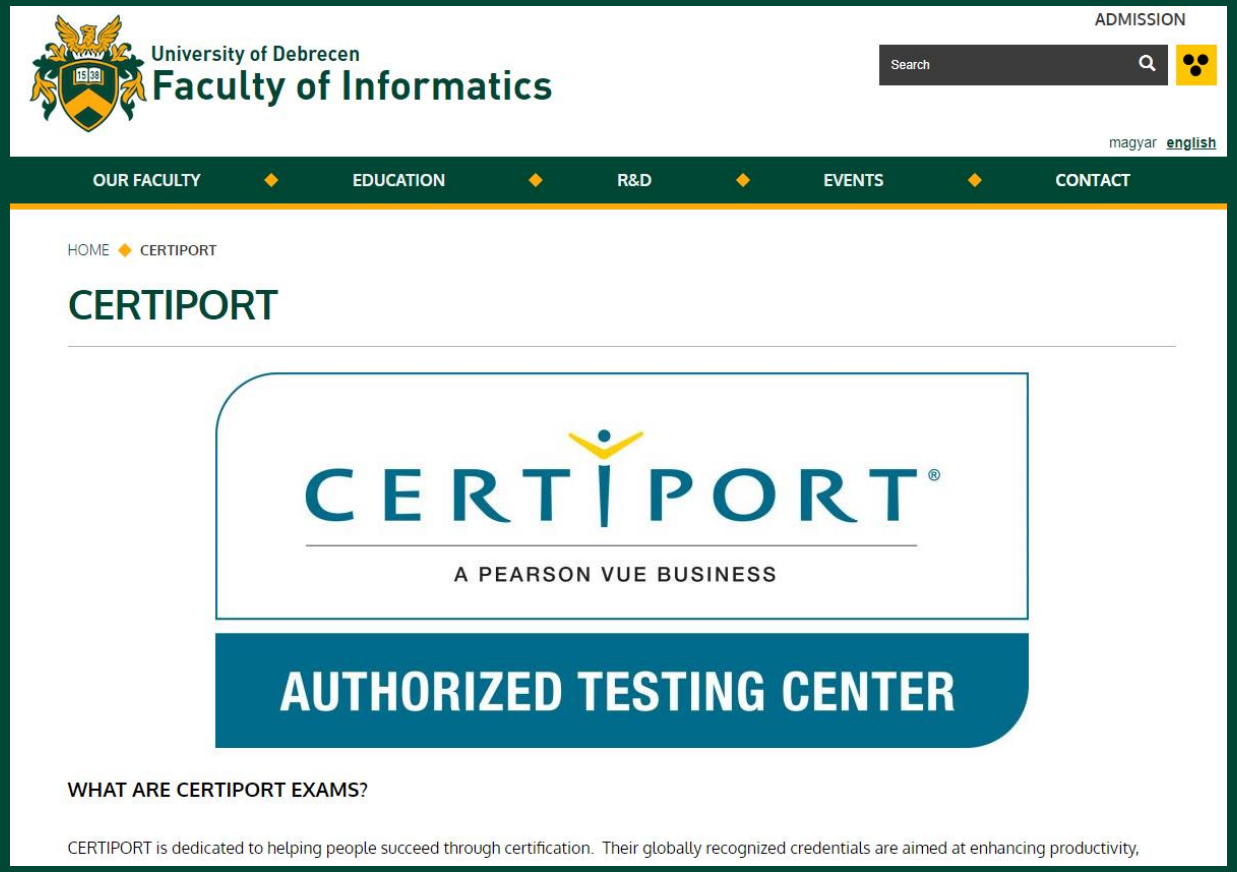
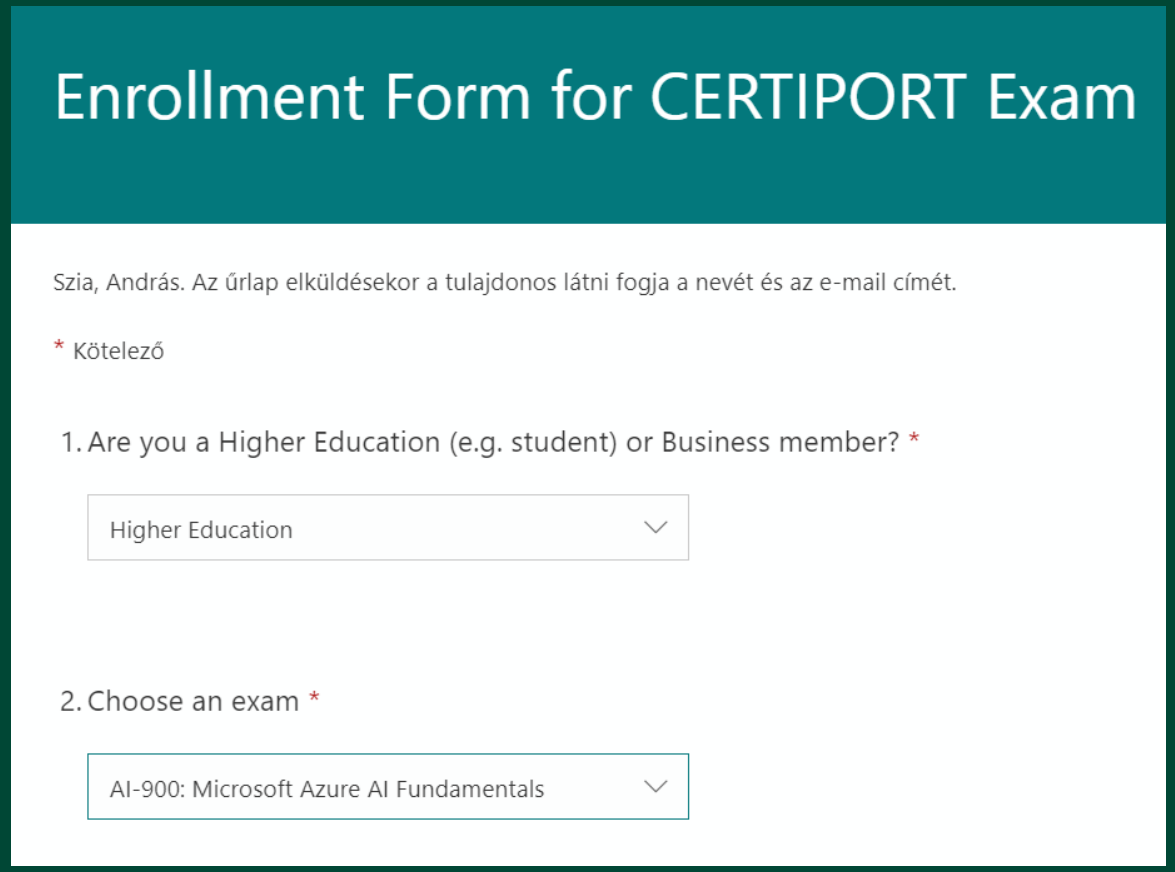
Technical Information about the Exam





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AI-900 Insctructors' Handbook, Contents

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AI-900 Insctructors' Handbook, Contents

Module 1: Introduction to AI

In this module, you'll learn about common uses of artificial intelligence (AI), and the different types of workload associated with AI. You'll then explore considerations and principles for responsible AI development.

Module 2: Machine Learning

Machine learning is the foundation for modern AI solutions. In this module, you'll learn about some fundamental machine learning concepts, and how to use the Azure Machine Learning service to create and publish machine learning models.

Module 3: Computer Vision

Computer vision is a the area of AI that deals with understanding the world visually, through images, video files, and cameras. In this module you'll explore multiple computer vision techniques and services.

Module 4: Natural Language Processing

This module describes scenarios for AI solutions that can process written and spoken language. You'll learn about Azure services that can be used to build solutions that analyze text, recognize and synthesize speech, translate between languages, and interpret commands.

Module 5: Conversational AI

Conversational AI enables users to engage in a dialog with an AI agent, or *bot*, through communication channels such as email, webchat interfaces, social media, and others. This module describes some basic principles for working with bots and gives you an opportunity to create a bot that can respond intelligently to user questions.

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AI-900 Labs, Contents

https://github.com/MicrosoftLearning/mslearn-ai900

data	Change file type.	11 months ago
images	Update for image upload for clarity.	5 months ago
instructions	Fix typo.	2 months ago
python_code	Change directory.	12 months ago
.gitignore	Update files.	12 months ago
01 - Image Analysis with Computer V...	Update cognitive service resource config.	11 months ago
02 - Image Classification.ipynb	Update instructions with workaround.	2 months ago
03 - Object Detection.ipynb	Update space.	2 months ago
04 - Face Analysis.ipynb	Fix typo - implementing	27 days ago
05 - Optical Character Recognition.ip...	fix(OCR): fix minor typo	6 months ago
06 - Receipts with Form Recognizer.i...	Cog Serv also used for forms update.	7 months ago
07 - Text Analytics.ipynb	Update 07 - Text Analytics.ipynb	6 months ago
08 - Speech.ipynb	Update to neural voice.	13 days ago
09 - Translation.ipynb	Remove playsound, audio issue.	7 months ago
10 - Language Understanding.ipynb	Add audio to LU lab.	5 months ago
11 - QnA Bot.ipynb	Updated formatting	4 months ago
LICENSE	Add yml and index.	12 months ago
README.md	Remove website.	11 months ago
_build.yml	Add yml and index.	12 months ago
_config.yml	Add yml and index.	12 months ago
getfiles.cmd	Rename for clarity.	12 months ago
index.md	Update local dev config instructions.	11 months ago
mapping.md	Change markdown list.	10 months ago

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AI-900 Labs, Contents

https://github.com/MicrosoftLearning/mslearn-ai900

- 01 - Image Analysis with Computer Vision.ipynb
- 02 - Image Classification.ipynb
- 03 - Object Detection.ipynb
- 04 - Face Analysis.ipynb
- 05 - Optical Character Recognition.ipynb
- 06 - Receipts with Form Recognizer.ipynb
- 07 - Text Analytics.ipynb
- 08 - Speech.ipynb
- 09 - Translation.ipynb
- 10 - Language Understanding.ipynb
- 11 - QnA Bot.ipynb

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Thanks for your attention.
(Moving on with AI-900 Lecture Notes)

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