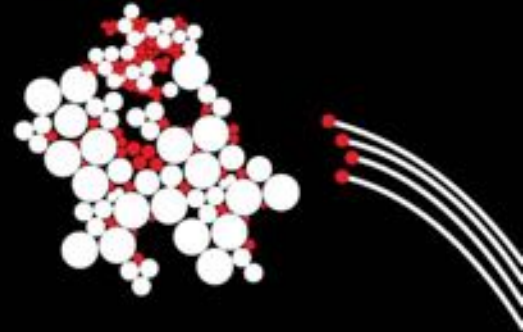


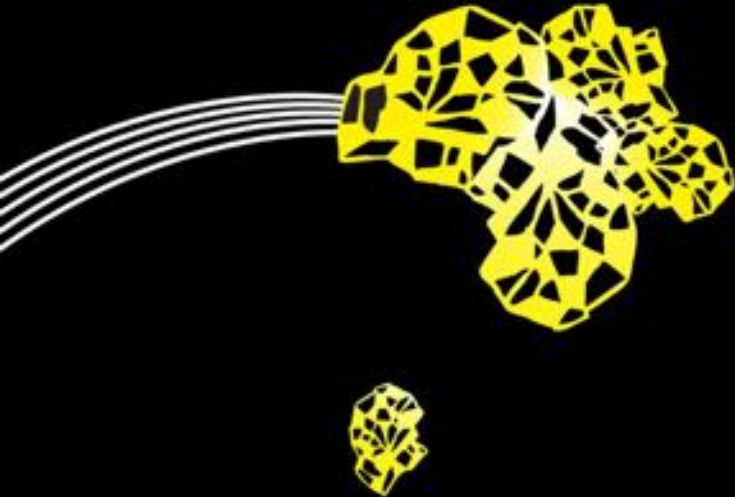
UNIVERSITY OF TWENTE.

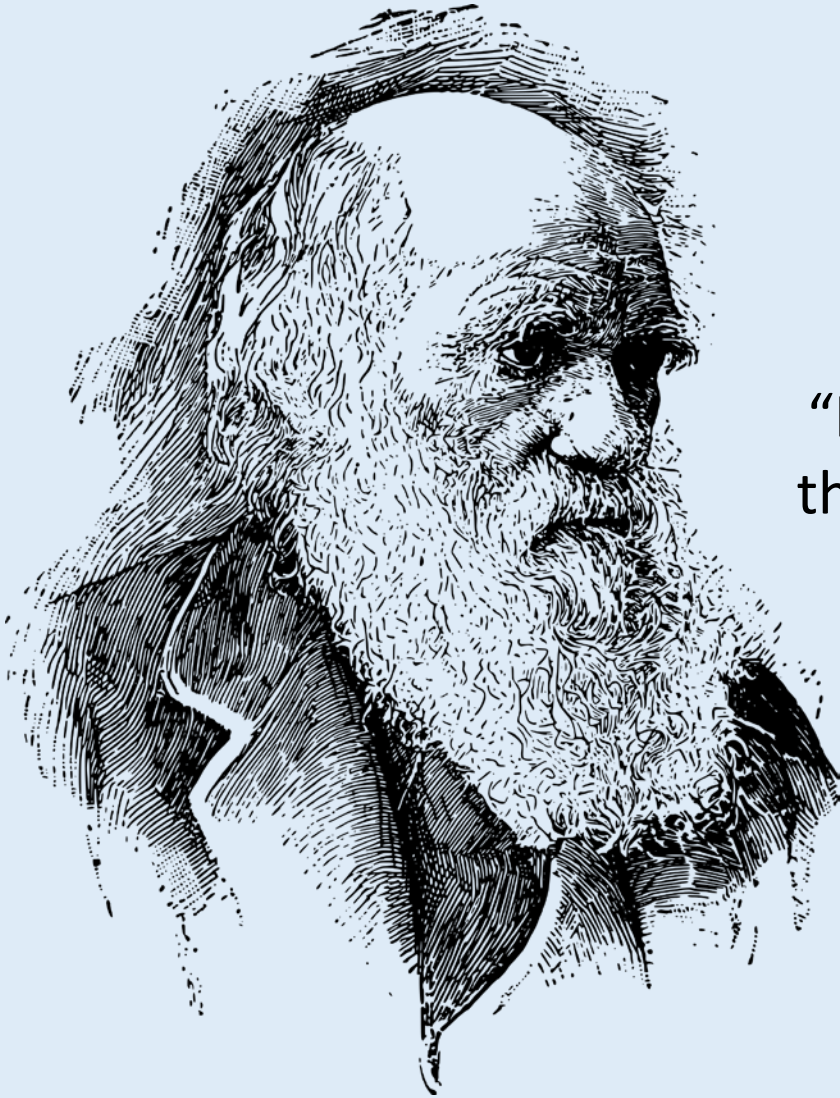
Challenging Education, Challenging the Education!



Parya Pasha Zadeh

**The ESA Earth Observation Φ -week
15 November 2018, Frascati, Italy**





“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change.”

Not Charles Darwin!

A photograph of three young adults walking on a paved path on a university campus. On the left, a young woman with long brown hair is wearing a blue hoodie with a white floral pattern and blue jeans, carrying a black backpack. In the center, a young woman with long blonde hair is wearing a white blouse, a brown leather jacket, and blue jeans. On the right, a young man with dark hair and glasses is wearing a grey t-shirt with a 'JOGJA' graphic, a blue zip-up hoodie, and grey pants. They are all smiling and looking towards each other. The background shows green trees and a building with large windows.

Education becomes a life long endeavor

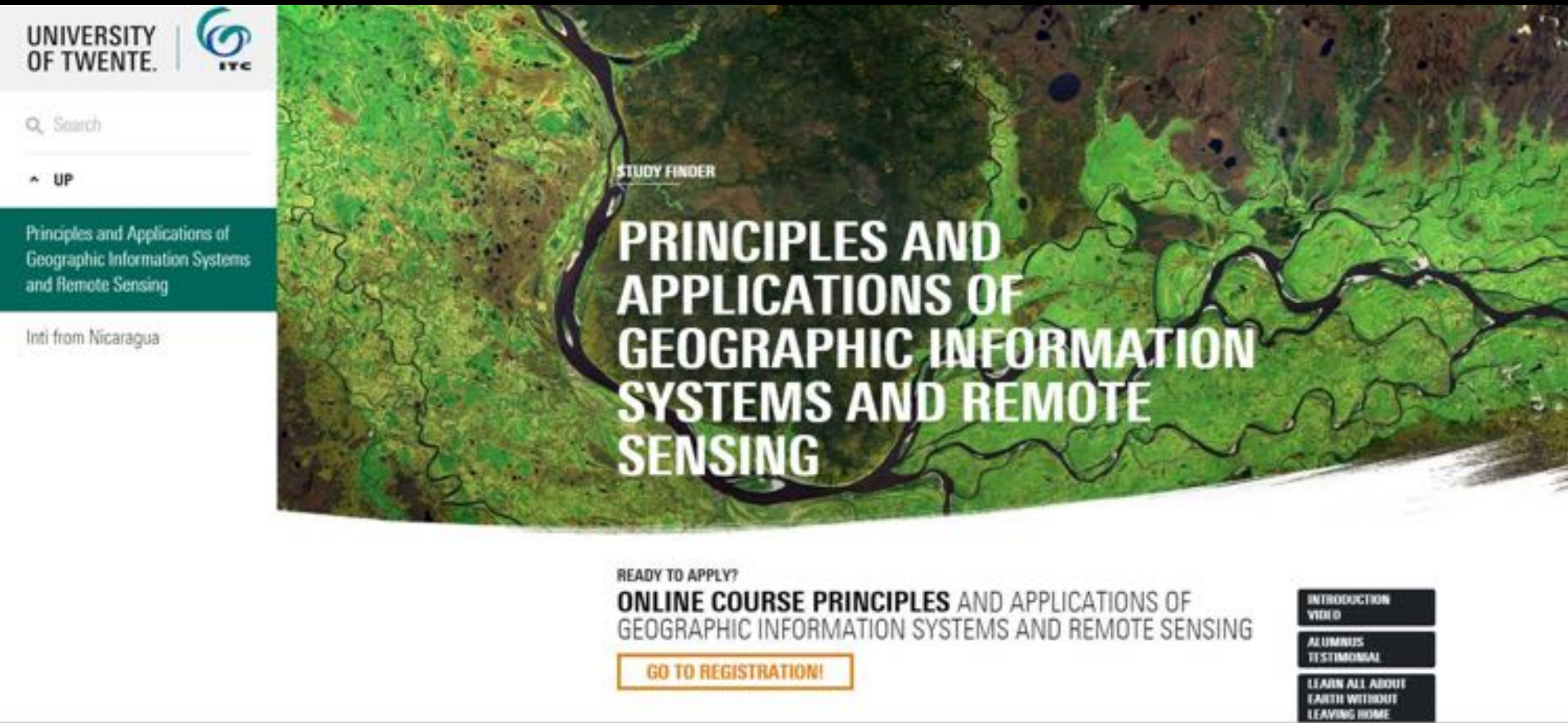
PART TIME, BLENDED, AND DISTANCE OPTIONS




You will get the best from geo-information experts from four universities in the Netherlands: University of Twente/ITC Enschede, TU Delft, Utrecht University and Wageningen University. These universities have joined forces to offer GIMA, each with their own specializations related to geo-information technology, management and applications. The GIMA programme offers more than advanced use of GIS (Geographic Information Systems) for a variety of applications: it also covers the management of geo-information and spatial data infrastructures in organizations and management styles. Since the start of the programme in 2003, GIMA has become one of the most popular and well evaluated master programs on geo-information applications and management in the Netherlands and our community keeps growing.

GIMA is a **blended learning** Master programme (see [Programme Structure](#)): most of the time you are studying from the place where you think you can study best (e.g. at home). For the first part of the programme (one or two years depending on whether you are a full-time or part-time student) there are only four short contact periods per year, one at each partner university. During those contact periods (with a duration of one or two weeks only) you are supposed to be present in person but for the rest of the year you can study through our electronic learning environment from wherever you are. Obviously, the same holds for the individual thesis research project of 6 (full-time) or 12 (part-time) months duration in the last part of the programme. When doing the program's internship with the same duration, of course you will have to be present at the geo-information company or institute you have selected for your internship.

PART TIME, BLENDED, AND DISTANCE OPTIONS



The image is a screenshot of a university website. The background is a satellite-style map of a river delta with green vegetation and brown water. The text is overlaid on this background.

UNIVERSITY OF TWENTE. | 

Search

UP

Principles and Applications of Geographic Information Systems and Remote Sensing

Inti from Nicaragua

STUDY FINDER

PRINCIPLES AND APPLICATIONS OF GEOGRAPHIC INFORMATION SYSTEMS AND REMOTE SENSING

READY TO APPLY?
ONLINE COURSE PRINCIPLES AND APPLICATIONS OF GEOGRAPHIC INFORMATION SYSTEMS AND REMOTE SENSING

[GO TO REGISTRATION!](#)

- INTRODUCTION VIDEO
- ALUMNUS TESTIMONIAL
- LEARN ALL ABOUT EARTH WITHOUT LEAVING HOME

PART TIME, BLENDED, AND DISTANCE OPTIONS

UNIVERSITY OF TWENTE | 

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Programmes

Master's

Postgraduate diploma

Diploma

Certificate

Online

Joint education

PhD



STUDY FINDER

EARTH OBSERVATION

READY TO APPLY?

ONLINE COURSE EARTH OBSERVATION

[GO TO REGISTRATION!](#)

Geographical information science (GIS) and Earth Observation are scientific disciplines that develop methods to extract information about the earth surface and use this information a for solving real-world problems. Many tools and services that are now main stream like GPS, route planners in cars and Google Earth were developed by GIScientists. Spatial data, and methods to combine and analyse spatial information can help to solve complex issues concerning health care, water and food security, climate change, urban planning, natural hazards

- FOR WHOM IS THE COURSE RELEVANT?
- WHAT IS THE COURSE CONTENT?
- WHAT WILL BE ACHIEVED?
- ONLINE LEARNING WHAT'S IT LIKE?
- ADDED BENEFITS
- ABOUT YOUR DIPLOMA
- MEET THE COURSE COORDINATOR

PART TIME, BLENDED, AND DISTANCE OPTIONS

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UP

Spatial Engineering

Programme +

Admission requirements +

How to apply +

Financial matters +

Student life +

Career

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ALL MASTER'S PROGRAMMES

MASTER'S PROGRAMME SPATIAL ENGINEERING

Education > Master > All master's programmes > Spatial Engineering

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Do you have a strong affinity with **technology and systems** and are you are **inspired by large-scale, complex challenges**? Are you a **creative thinker** willing and able to **look beyond the obvious solutions**? Are you eager to **engage with what is happening in the world** and to use your skills to **make our planet more sustainable**? Do you have a relevant Bachelor's degree and sufficient command of the English language?

If so, the Master's programme in Spatial Engineering at the University of Twente may be just up your street. Check out the [study programme](#) or find out more about why you should choose [Spatial Engineering at the University of Twente](#).

MASTER'S INTRODUCTION VIDEO

A TWO-YEAR INTERNATIONAL MASTER'S

CASE STUDIES

KEY INFORMATION

FEEDBACK





→ **E04SD**

an ESA initiative to support the uptake of EO-derived information in sustainable development

High-Level Capacity Building:
1-day awareness events followed by Q&A sessions, short recorded videos, integration in existing learning environments

Hands-on Capacity Building:
Local workshops in two steps, self study follow up materials, project based learning, E-learning packages, MOOCs



General Awareness: News, Brochures, Knowledge portals, Webinars

Need for higher capacity





powered by:



TNO

Design and production: M&M&M







Missing Maps

Putting the World's Vulnerable People on the Map

Step 1
We collect satellite imagery
and upload it into OpenStreetMap

Step 2
Community volunteers add
detail such as neighborhoods, street
names, and evacuation centers

Step 3
The resulting maps
are used to help
relief workers and
other organizations



American Red Cross

British Red Cross

International
Coordinating
Centre



THE 4 Cs OF EDUCATION

IN THE 21ST CENTURY

C

Communication

C

Collaboration

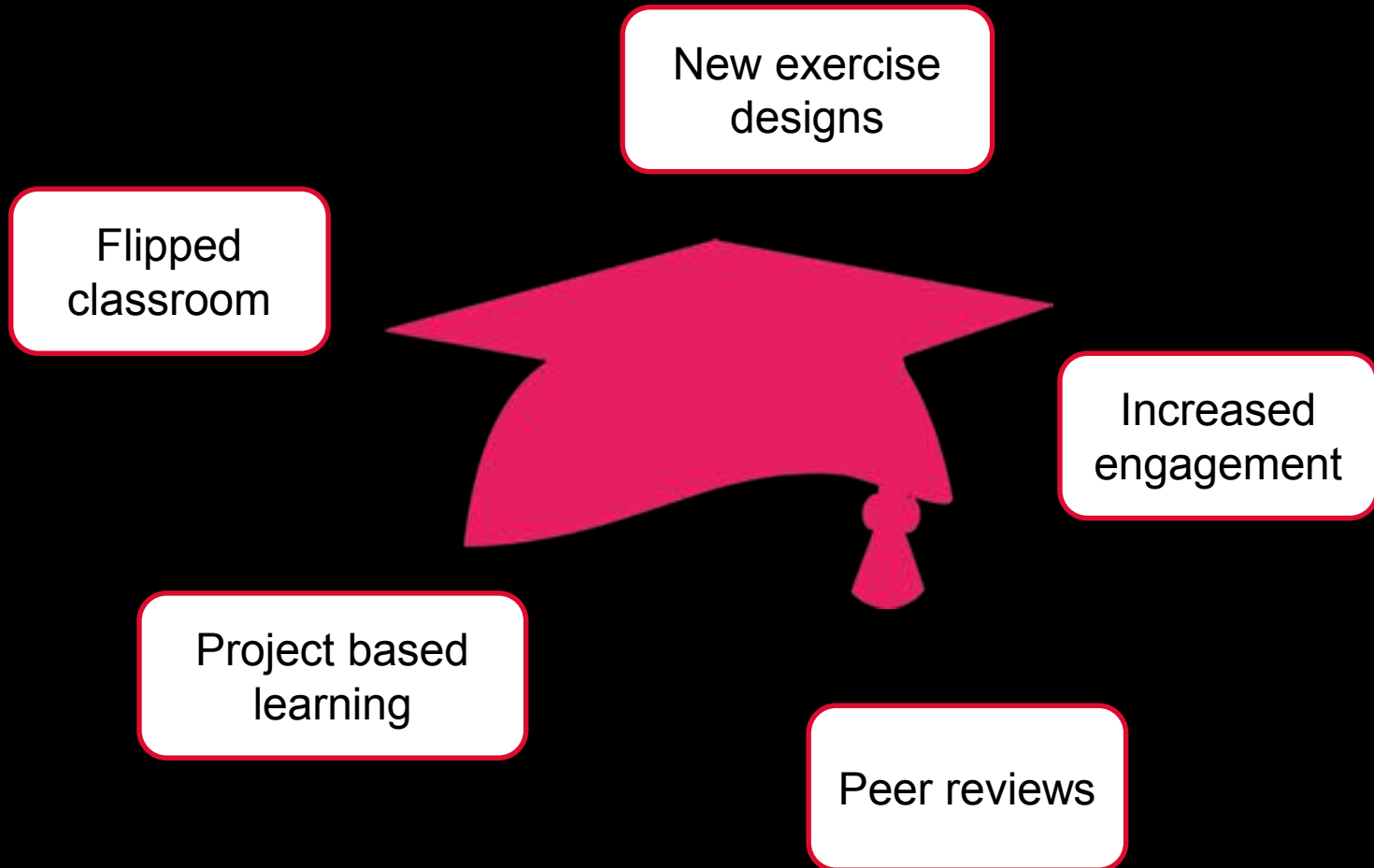
C

Critical Thinking

C

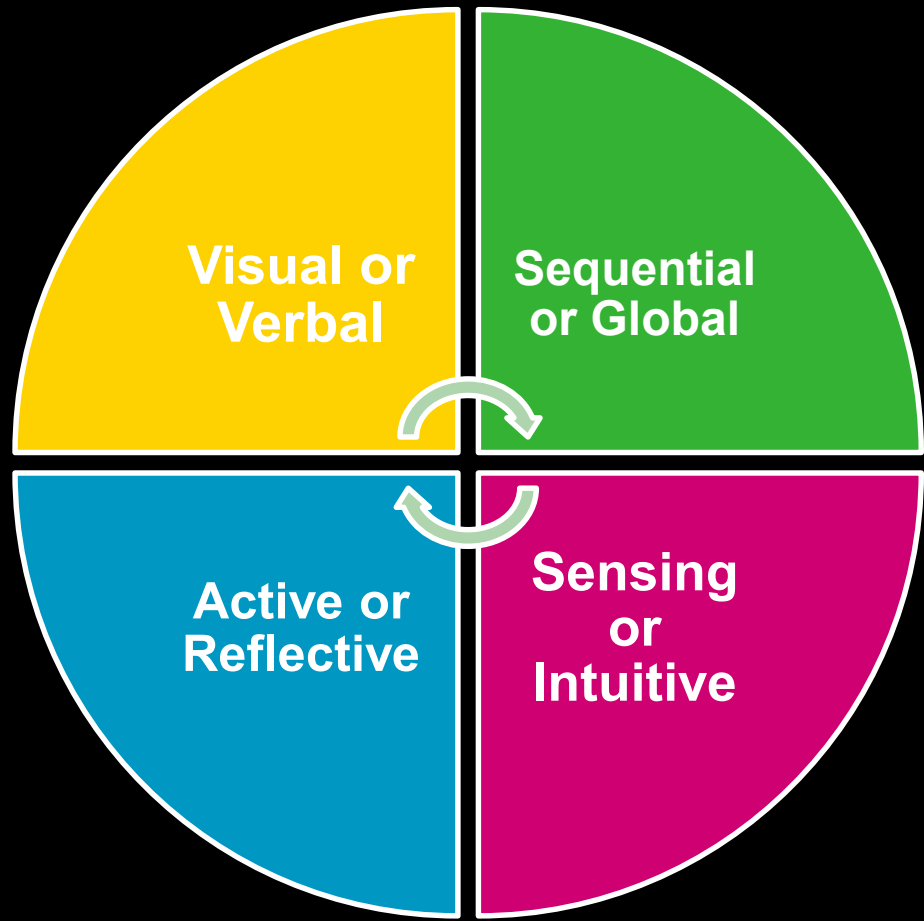
Creativity

STUDENT CENTRED LEARNING

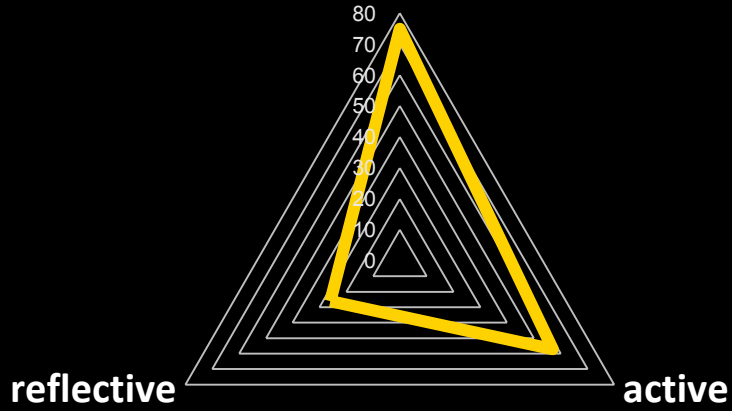


STUDENT STUDY APTITUDES

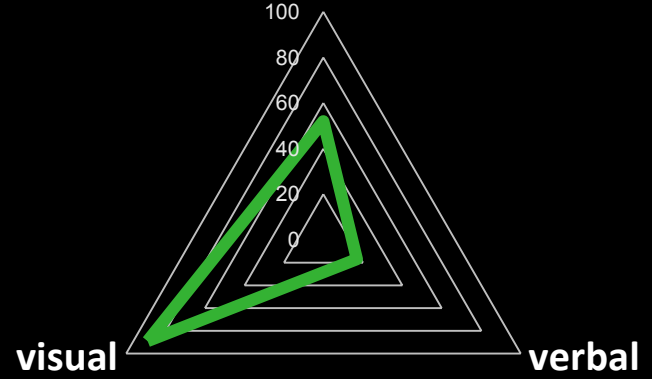
DIFFERENT LEARNING STYLES



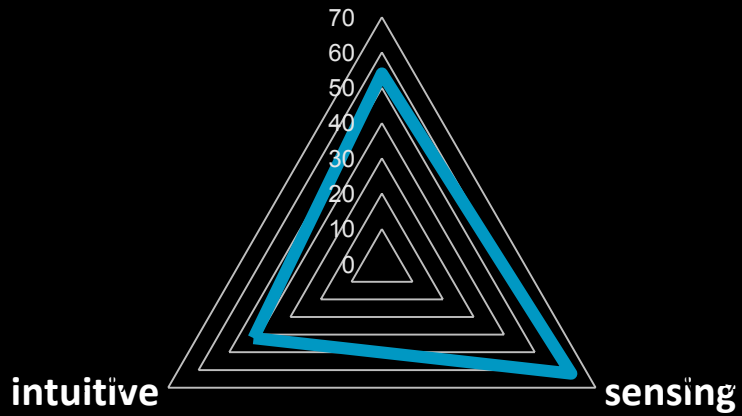
neutrally balanced



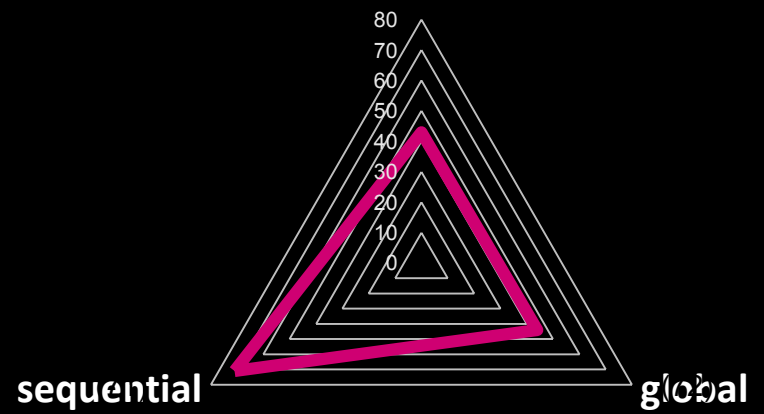
neutrally balanced



neutrally balanced



neutrally balanced



Georeferencing

In the early days of geoinformation science, spatially referenced data usually originated within national boundaries, i.e. these data were derived from printed maps published by national mapping organizations. Nowadays, users of geoinformation are combining spatial data from a given country with global spatial data sets, reconciling spatial data from published maps with coordinates established by satellite positioning techniques, and integrating their spatial data with that from neighbouring countries. To perform these kinds of tasks successfully, we need to understand basic spatial referencing concepts.

Prior knowledge

- [Coordinate system](#)

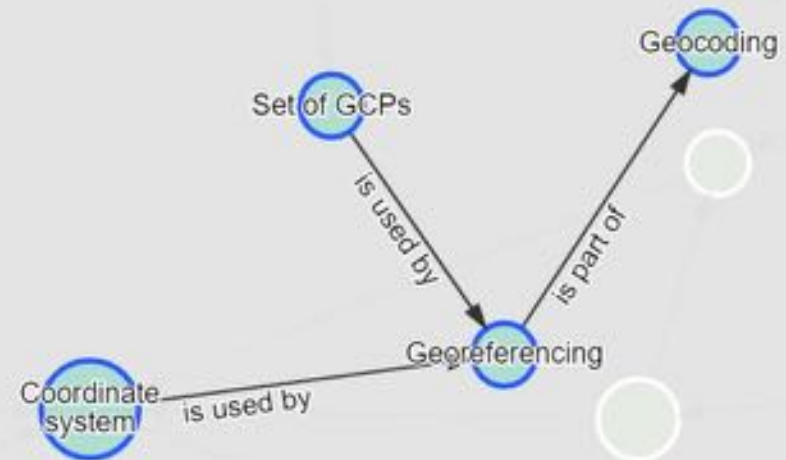
Learning outcomes

- **8 - Spatial referencing**
Apply coordinate transformations and spatially reference an image in a GIS (level 3).

Explanation

The simplest way to link image coordinates to map coordinates is to use a transformation formula. A geometric transformation is a function that relates the coordinates of two systems. A transformation relating (x, y) to (i, j) is commonly defined by linear equations, such as: $x = 3 + 5i$, and $y = -2 + 2.5j$.

Using the above transformation, for example, the image position $(i = 3, j = 4)$ corresponds to map coordinates $(x = 18, y = 8)$. Once the transformation parameters have been determined, the map coordinates for each pixel can be calculated. This implies that we can superimpose data that are



Coordinate system

Different kind of coordinates are used to position objects in a two- or three-dimensional space.

Spatial coordinates (also known as global coordinates) are used to locate objects either on the earth's surface in a 3D space, or on the earth's reference surface (ellipsoid or sphere) in a 2D space. Specific examples are the geographic coordinates in a 2D or 3D space and the geocentric coordinates, also known as 3D Cartesian coordinates.

The latitude and longitude angles represent the 2D geographic coordinate system.

Planar coordinates on the other hand are used to locate objects on the flat surface of the map in a 2D space. Examples are the 2D Cartesian coordinates and the 2D polar coordinates.

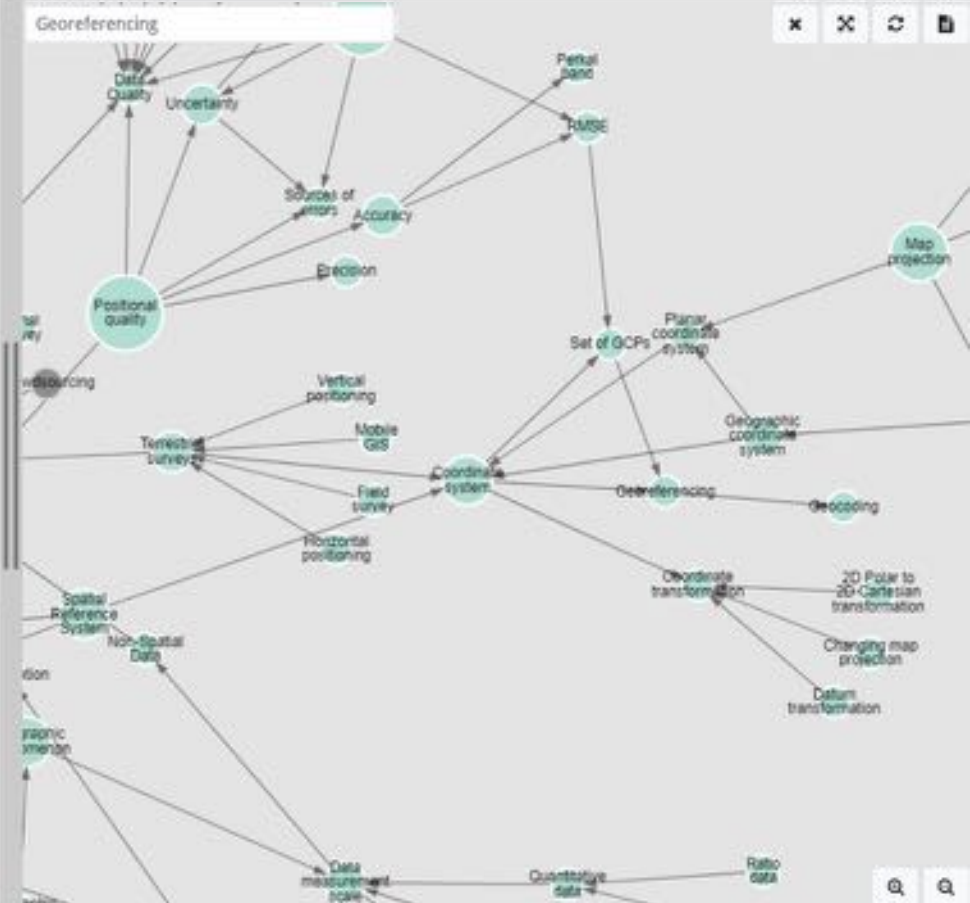
An illustration of the 2D Cartesian coordinate system

Learning outcomes

- 7 - Coordinate systems and map projections
Explain the relevance of reference surfaces, coordinate systems, and coordinate transformations in mapping (level 1 and 2).

Outgoing relations

- Coordinate system is processed by Coordinate transformation



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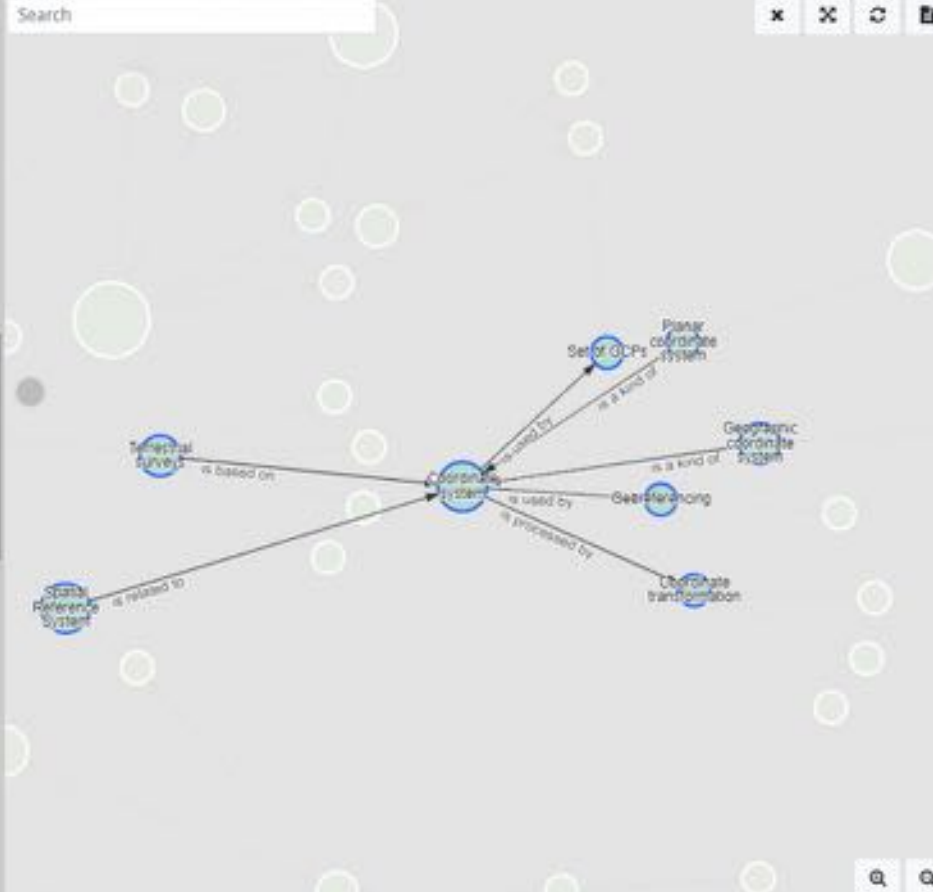
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Outgoing relations

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TEACH CODING WITHOUT FOCUS ON SYNTAX

The screenshot displays the CodeMonkey interface for a game development exercise. On the left, a sidebar contains instructions and a code example. The main workspace is divided into three sections: a code editor, a widget palette, and a game preview window.

Code Editor: The code is written in a block-based style:

```
onKey = (key) =>  
  # Use the up arrow to make the spaceship go up  
  if key == keyboard.up  
    # Add your code here
```

Widget Palette: Located at the bottom, it includes categories like MOVEMENT, EVENTS, DISPLAY, CONTROL, and OPERATORS. Visible widgets include 'spaceship' and 'star'.

Game Preview: The rightmost section shows a dark space background with a yellow star and a spaceship. The coordinates 'x:125 y:199' are visible in the top left corner of the preview area.

Instructions: The exercise is titled 'Use the UP key to produce thrust'. It asks the user to check if the 'up arrow' key was pressed and use an 'if' statement. A 'Code Example' box shows the following code:

```
onKey = (key) =>  
  if key == keyboard.up  
    @thrust 100
```

A 'CHECK' button is located at the bottom of the instructions section.

Kahoot!



The logo for codegrade features a white graduation cap icon to the left of the word "codegrade" in a white, lowercase, sans-serif font.



Mentimeter

THE 4 C'S OF EDUCATION

IN THE 21ST CENTURY

C

Communication

C

Collaboration

C

Critical Thinking

C

Creativity

Cultural Sensitivity

Ethics

Empathy





Parya Pasha
p.pasha@utwente.nl