



**GIGALA**

Engineering Design by  
Artificial Intelligence

Giorgi Tskhondia



Hello. I am Giorgi, ex subsea pipeline installation engineer, data science professional & founder at Gigala. I combine structural engineering and artificial intelligence to optimize designs for mechanical elements and components.

# Mission

- Solving creativity to advance science and engineering
- Making AI accessible



AI and engineering design bring great

# new features

to offshore construction  
and topology optimization

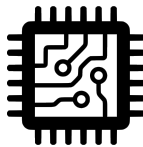


# Our expertise



## OFFSHORE DYNAMICS

- Subsea pipelines installation
- Lifting operation
- Renewables
- ROV/UUV control
- Dynamic positioning with AI



## TOPOLOGY OPTIMIZATION

- Mechanical elements
- Offshore structures
- Pipelay profiles
- Spools



# Subsea pipeline installation **EXPERTISE**



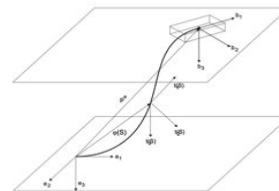
## Certificate

Installation calculation for  
subsea pipelines



## Methodology

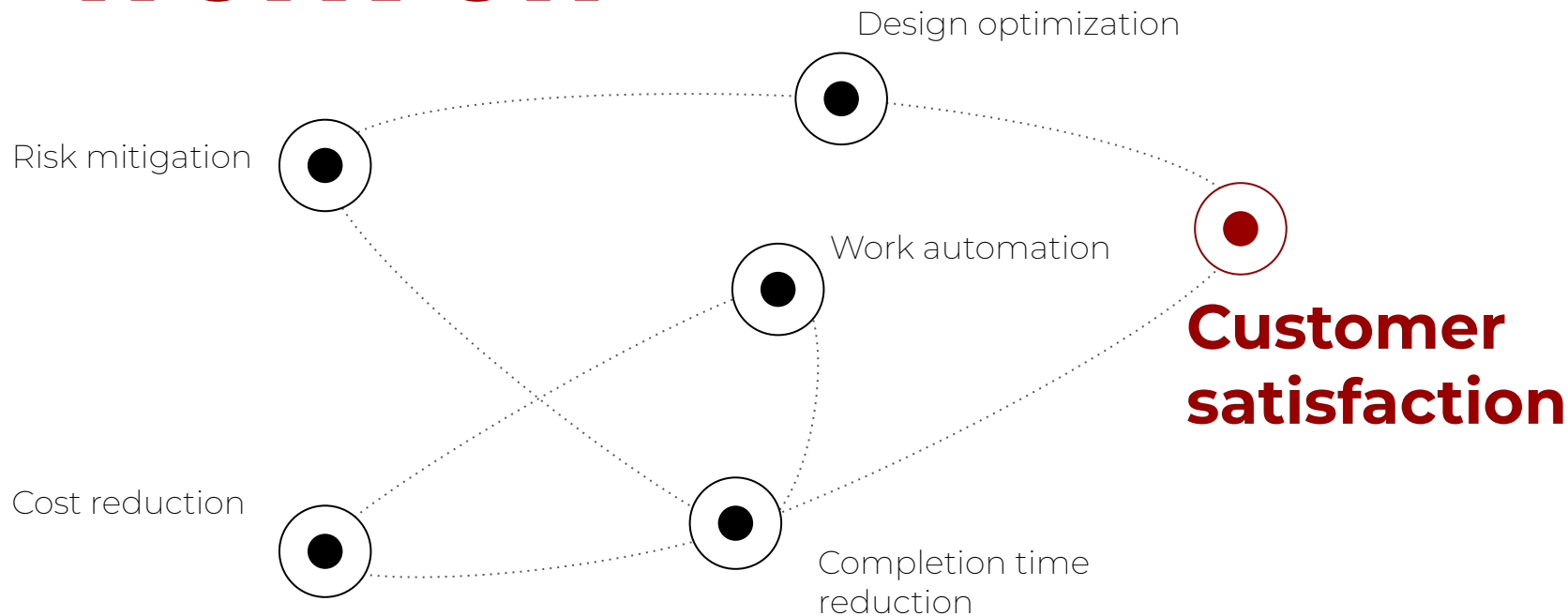
Subsea pipelines  
installation analysis.



## Software

Modelling offshore dynamics  
during construction phase

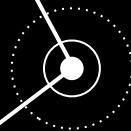
# in each project we work on



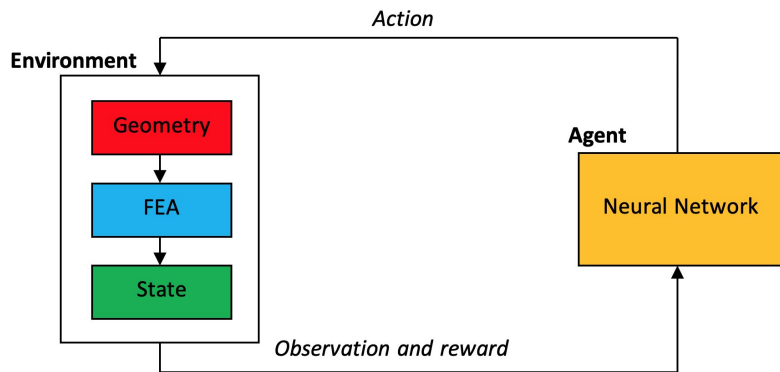
# OFFSHORE DYNAMICS demo

You can find and try our solutions at

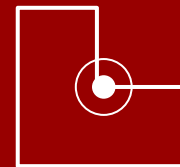
 **GitHub** [follow the link](#) or QR-code







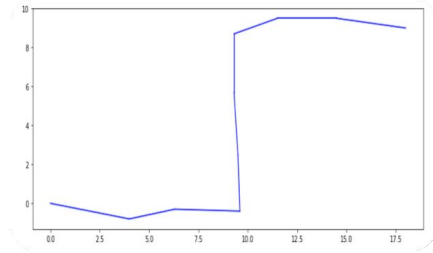
**Engineering design automation** can be formulated as Markov decision process (MDP). where an engineer provides initial geometry of a structure, sets loads and allowed actions to alter the geometry, specifies the optimization objective (e.g. minimize weight, maximize stiffness), and starts training the model. After the training, in inference stage, the engineer gets her final design. This process can be augmented by recent developments in Generative AI.



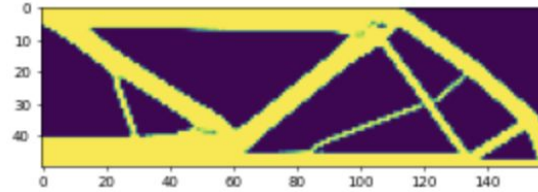
## TOPOLOGY OPTIMIZATION

- Mechanical elements
- Offshore structures
- Spools
- Pipelay profiles

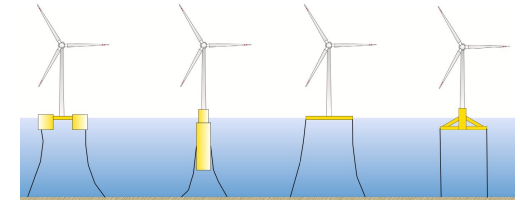
Spools



a Bridge



Renewables



Software  
for topology optimization and sizing

# TOPOLOGY OPTIMIZATION demo

You can find and try our solution at

**GitHub** [follow the link](#) or QR-code



# 7 STEPS

to the service we can be proud of

**1** Your application

**2** Scope or work, NDA, PoC, IP

**3** Cost estimation

**4** Contract and schedule of work

**5** Development, testing

**6** Integration

**7** Win&win partnership

Pipeline dynamics: J-lay, S-lay



Risers, moorings, pipelines



Pipeline automation



Hardware-in-the-loop (HIL) testing for vessel control systems



Lifting operation



# What we do and work with

Offshore floating wind farms dynamics



ROV/UUV control



Vessel motion



Topology optimization



Pipeline profile optimization



# Pricing on development



PoC cost to be discussed individually



Project tailoring cost to be discussed individually

# free

demo and sample code testing

**8 years**

PhD MAI'12, and offshore  
engineering



Experience



**7 years**

in data science

# Technologies

Writing high quality  
**CODE**



State-of-the-art  
**TECHNOLOGIES**



No/low  
**DATA**





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