



GIGALA

Engineering Design by
Artificial Intelligence

The background of the slide features a large, abstract geometric design. A thick, black, jagged line, resembling a mountain range or a stylized 'M', runs diagonally from the bottom left towards the top right. Overlaid on this is a thin white line that follows a similar jagged path. At three points along this white line, there are concentric circles: the first is a dotted outer circle with a solid inner circle, and the other two are solid concentric circles. The overall aesthetic is modern and technical.

Georgy Tskhondiya



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

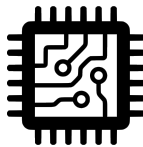


Our expertise



OFFSHORE DYNAMICS

- Subsea pipelines installation
- Lifting operation
- Offshore floating wind farms
- ROV/UUV control
- Dynamic positioning with AI



TOPOLOGY OPTIMIZATION

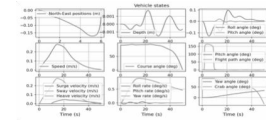
- Mechanical structures
- Electrical circuits
- MEMS
- Computer chips
- Engines



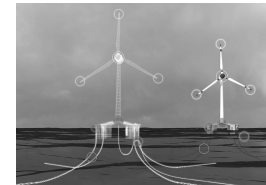
Bending, stress and strains during pipeline installation.
Design criteria in accord with DNV-OS-F101 standard.



Lifting stability in accord with DNV-ST-H205 standard.



As input to offshore dynamics simulation.



Efficacy of the technology.

Subsea pipeline installation **EXPERTISE**



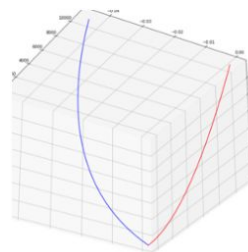
Certificate

Installation calculation for
subsea pipelines



Methodology

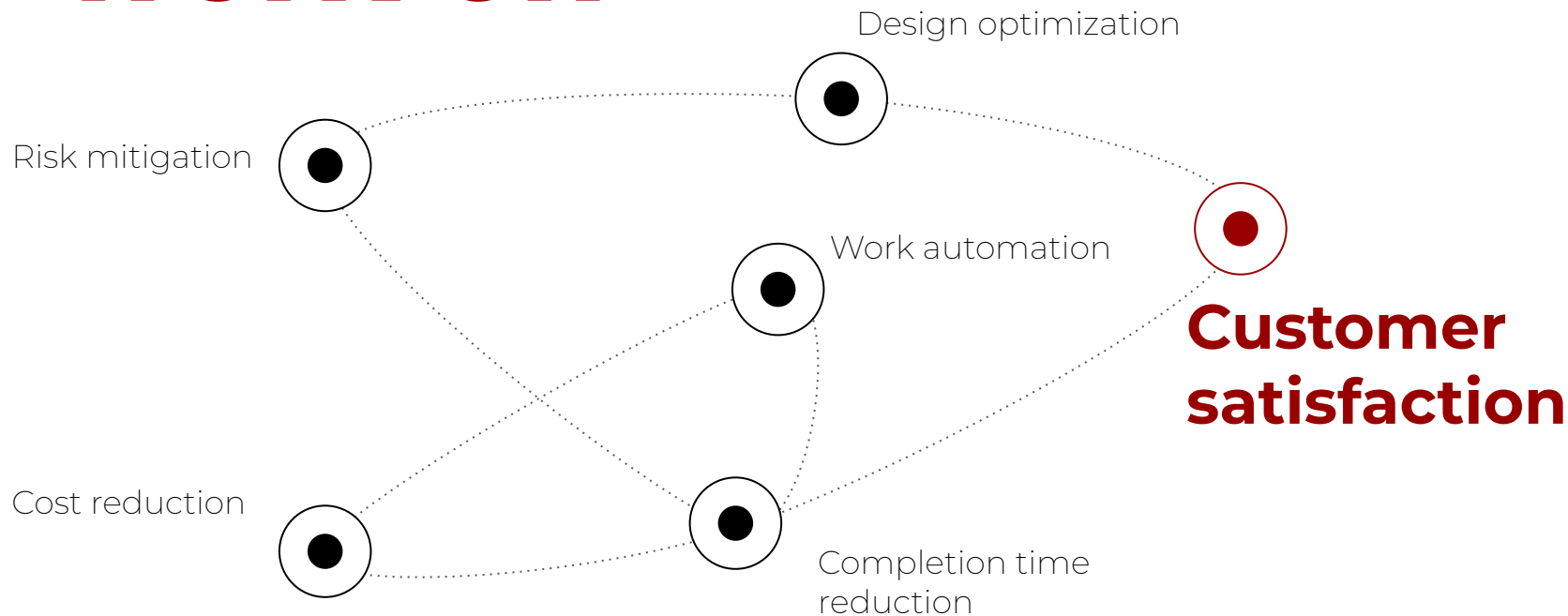
Subsea pipelines
installation analysis



Software

Modelling offshore dynamics
during construction phase

in each project we work on

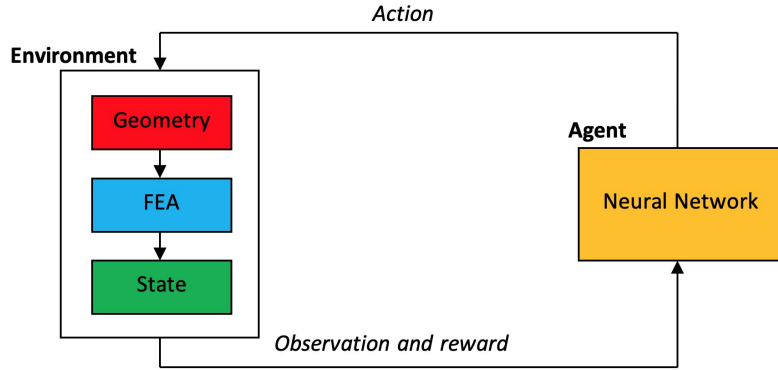


OFFSHORE DYNAMICS demo

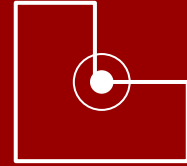
You can find and try our solutions at

 **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 structures
- Electrical circuits
- MEMS
- Computer chips
- Engines

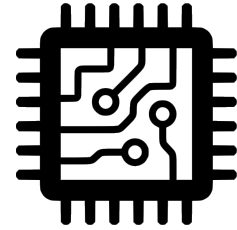
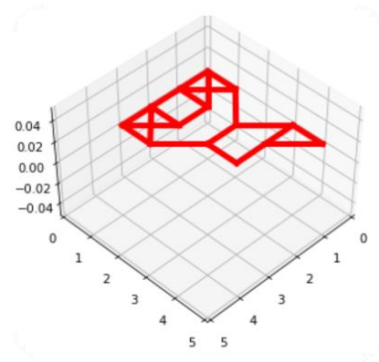
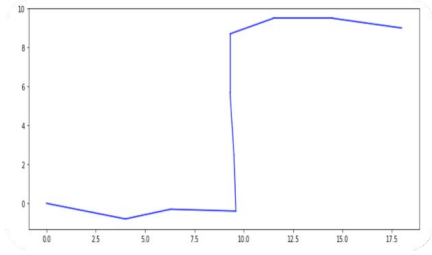
Spools



Bionic partition



MEMS & Chips



Software
for topology optimization and sizing

TOPOLOGY OPTIMIZATION demo

You can find and try our solution at

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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 at the rate of 50\$/ hr
per engineer



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



Ready to take your design technologies to the next level? Contact us!

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<https://linkedin.com/in/gigatskhondia>

gigatskhondia@gmail.com



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