

# Success Story Templates

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Industrial HPC Course



# SUCCESS STORY IN BIOINFORMATICS

## COMPANY NUCLEIN LLC

8305 Cross Park Dr  
Austin, TX 78710  
USA  
<https://www.nuclein.com/>

## THE PROBLEM

Detect cellular identities in liquid biopsy samples using AI.

SUCCESS STORY DETAILS  
HPC provider: FCSE, UKIM  
Domain Expert:Gjorgji Madzarov  
Country:North Macedonia  
Link:

## THE HPC PROBLEM DOMAIN

Natural language processing (NLP)  
Parallel processing  
Distributed machine learning

## THE SOLUTION

In progress...  
Building and adjusting a transferable model for DNA sequence representation of individual epigenetic mechanisms.

## THE BENEFITS

Identify healthy persons and cancer patients

# SUCCESS STORY IN INDUSTRIAL DOMAIN BIOINFORMATICS

## THE PROBLEM

Develop an AI model(s) from high DNA data volumes that will be able to detect cellular identities in liquid biopsy samples based on reference molecular fingerprints from healthy and diseased states.

## THE HPC PROBLEM DOMAIN

Natural language processing (NLP)  
Parallel processing  
Distributed machine learning

## THE SOLUTION

In progress...

Building a transferable model for DNA sequence representation of individual epigenetic mechanisms  
Adjusting the transferable model for multiple downstream tasks such as prediction of cellular identities, prediction of functional genomic elements.

## THE BENEFITS

Understanding the language of non-coding and coding DNA with their underlying epigenomic context.  
Discrimination between reference epigenomic fingerprints in blood from healthy persons and cancer patients.