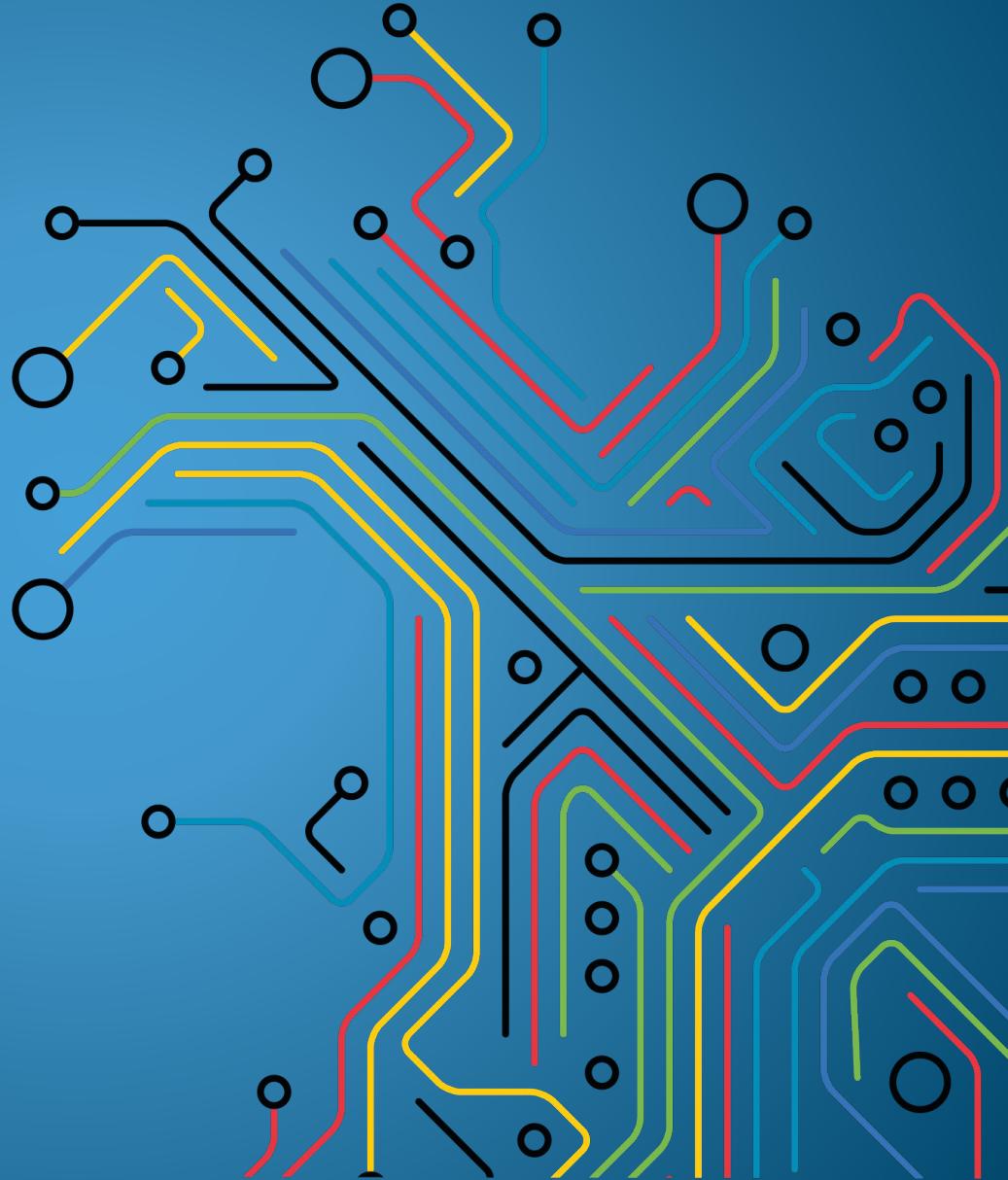


Journal Club

VCMI

Laércio Pioli Junior



Contents

About Me

Bachelor, Master & Ph.D.

Worked Projects

PhD. Research

INESC TEC Internship

How to use the knowledge in my Ph.D.



About Me

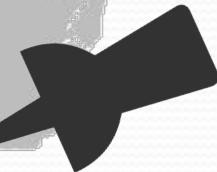
Where I am from?



1	Russia	17,098,242
2	Canada	9,984,670
3	China	9,706,961
4	US	9,372,610
5	Brazil	8,515,767

Acre [164.123 km²] – Nepal [147.181 km²]
Alagoas [27.778 km²] – Haiti [27.750 km²]
Amapá [142.828 km²] – Tajiquistão [143.100 km²]
Amazonas [1.559.159 km²] – Mongólia [1.566.000 km²]
Bahia [564.733 km²] – França [643.801 km²]
Ceará [148.920 km²] – Grécia [131.957 km²]
Distrito Federal [5.779 km²] – Trinidad e Tobago [5.131 km²]
Espírito Santo [46.095 km²] – Suíça [41.285 km²]
Goiás [340.111 km²] – Finlândia [338.424 km²]
Maranhão [331.937 km²] – Itália [301.338 km²]
Mato Grosso [903.366 km²] – Venezuela [916.445 km²]
Mato Grosso do Sul [357.145 km²] – Alemanha [357.168 km²]
Minas Gerais [586.522 km²] – Espanha [504.645 km²]
Pará [1.247.954 km²] – Angola [1.247.000 km²]
Paraíba [56.585 km²] – Croácia [56.594 km²]
Paraná [199.307 km²] – Senegal [196.712 km²]
Pernambuco [98.311 km²] – Portugal [92.212 km²]
Piauí [251.577 km²] – Guiné [245.836 km²]
Rio de Janeiro [43.780 km²] – Dinamarca [42.925 km²]
Rio Grande do Norte [52.811 km²] – Bósnia [51.197 km²]
Rio Grande do Sul [281.730 km²] – Equador [283.560 km²]
Rondônia [237.590 km²] – Laos [236.800 km²]
Roraima [224.300 km²] – Guiana [214.970 km²]
Santa Catarina [95.736 km²] – Hungria [93.030 km²]
São Paulo [248.222 km²] – Reino Unido [243.610 km²]
Sergipe [21.915 km²] – Israel [20.770 km²]
Tocantins [277.720 km²] – Nova Zelândia [268.021 km²]

Where I am from?

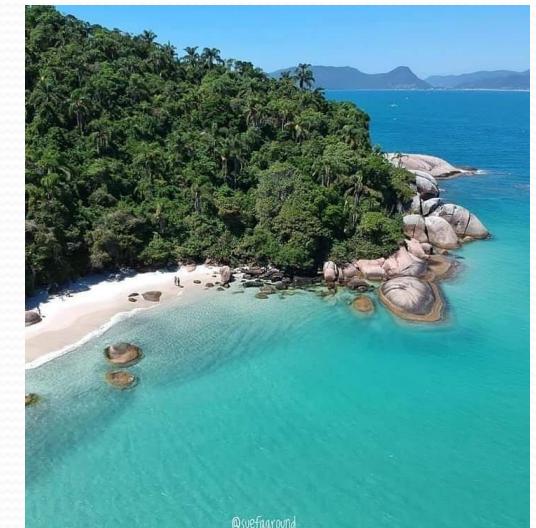


- Total area: 1,521,110 square kilometers.
- Total population: 12,325,232 inhabitants.
- Gross Domestic Product (GDP): \$219.11B today.

Where I am from?



Where I'm living right now? Florianópolis



Where is located Florianópolis?



Education

Bachelor Degree – Computer Science – UFJF

Exchange: Universität Passau – Germany – 2016–2017



Master Degree – Computer Science – UFJF

Internship: The 3rd RIKEN R-CCS HPC Youth Workshop – Japan – 2019



Master Degree – Computer Science – UFJF

Internship: The 3rd RIKEN R-CCS HPC Youth Workshop – Japan – 2019



PhD. Degree – Computer Science – UFSC

Internship: INESC TEC 2023



PhD. Degree – UFSC

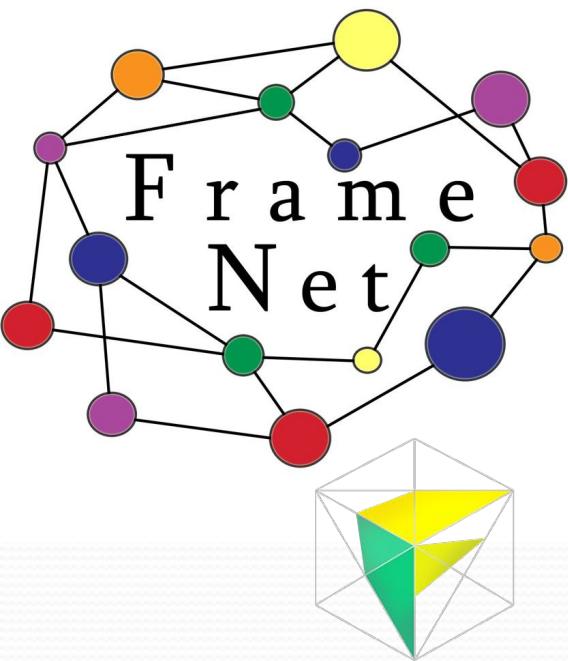
Exchange: Incoming 2023



FEUP FACULDADE DE ENGENHARIA
UNIVERSIDADE DO PORTO



Projects I've Worked on.



FRAMENET
BRASIL
COPA DO MUNDO

Grid'5000

PORIKEN



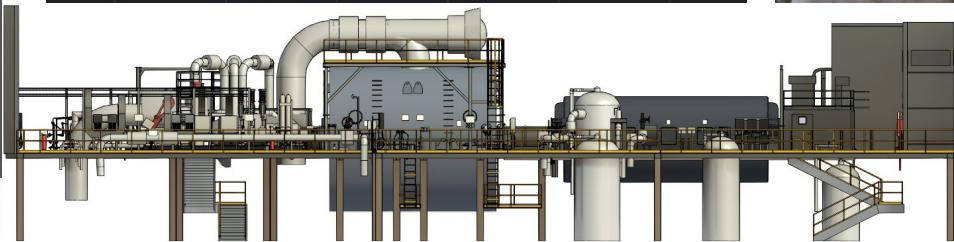
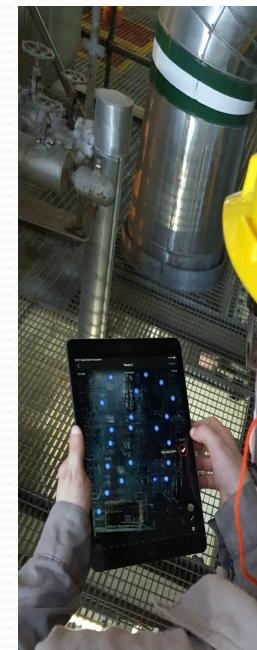
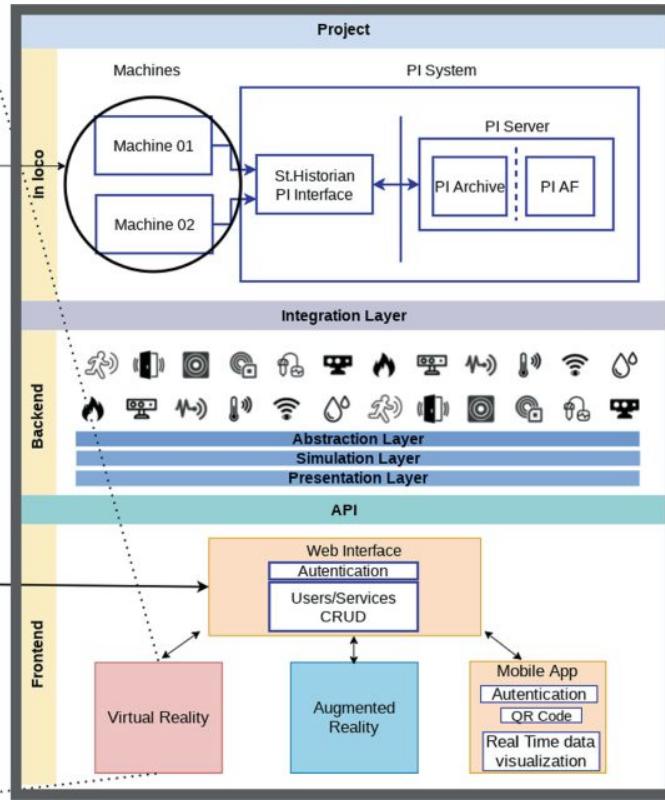
INESC

P&D
BRASIL



UNIVERSITÄT
PASSAU

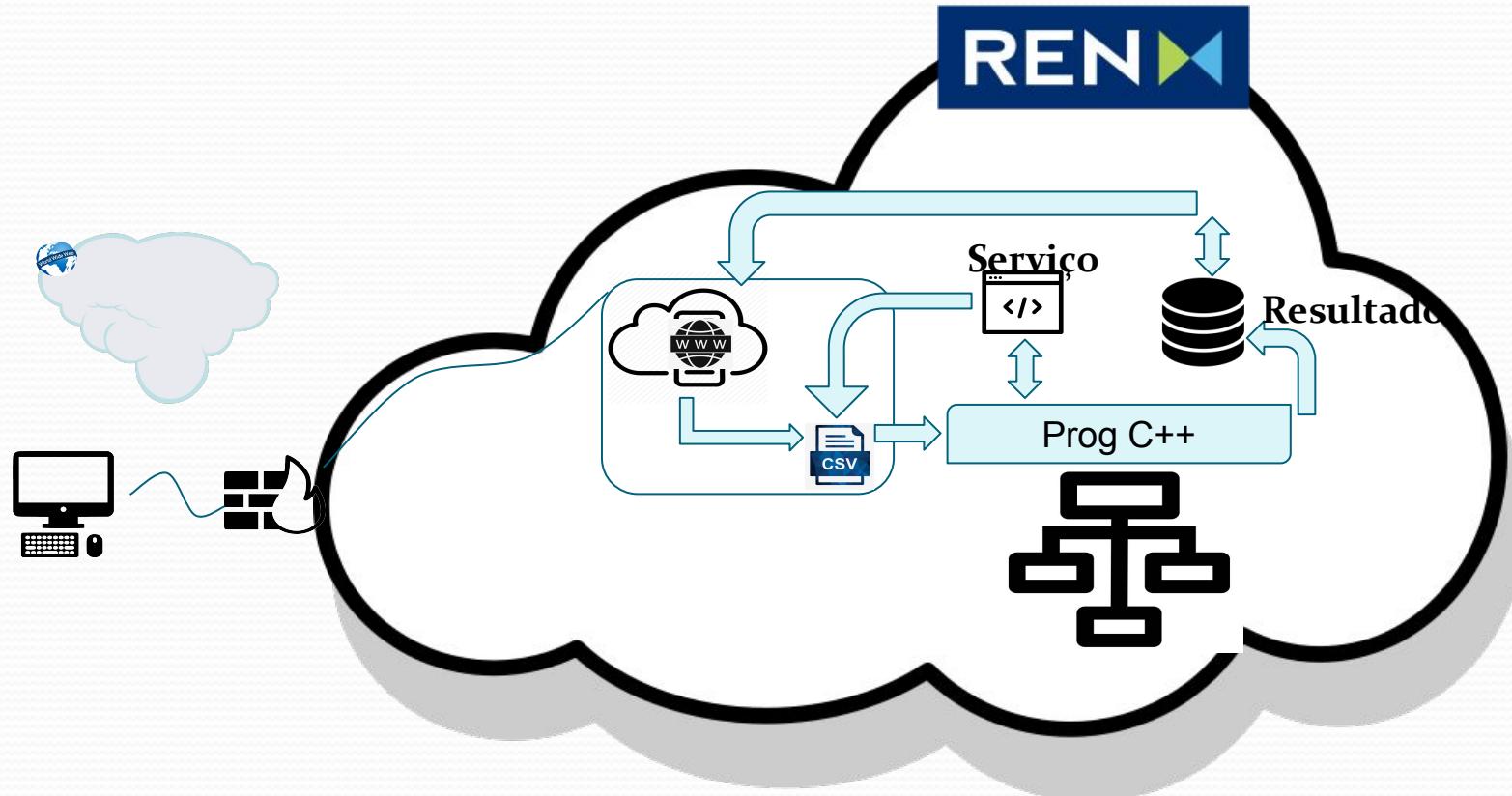
INESCTEC

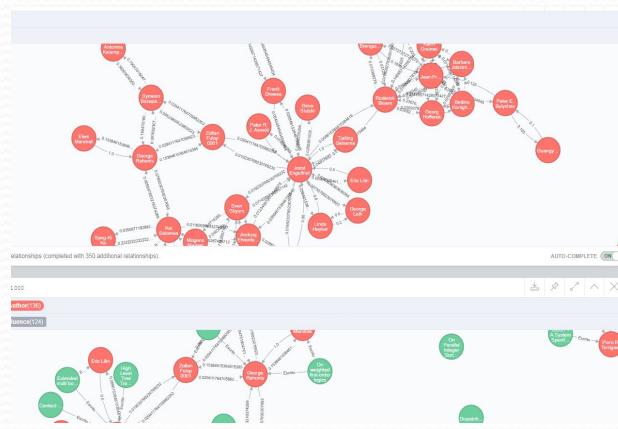




INESCTEC

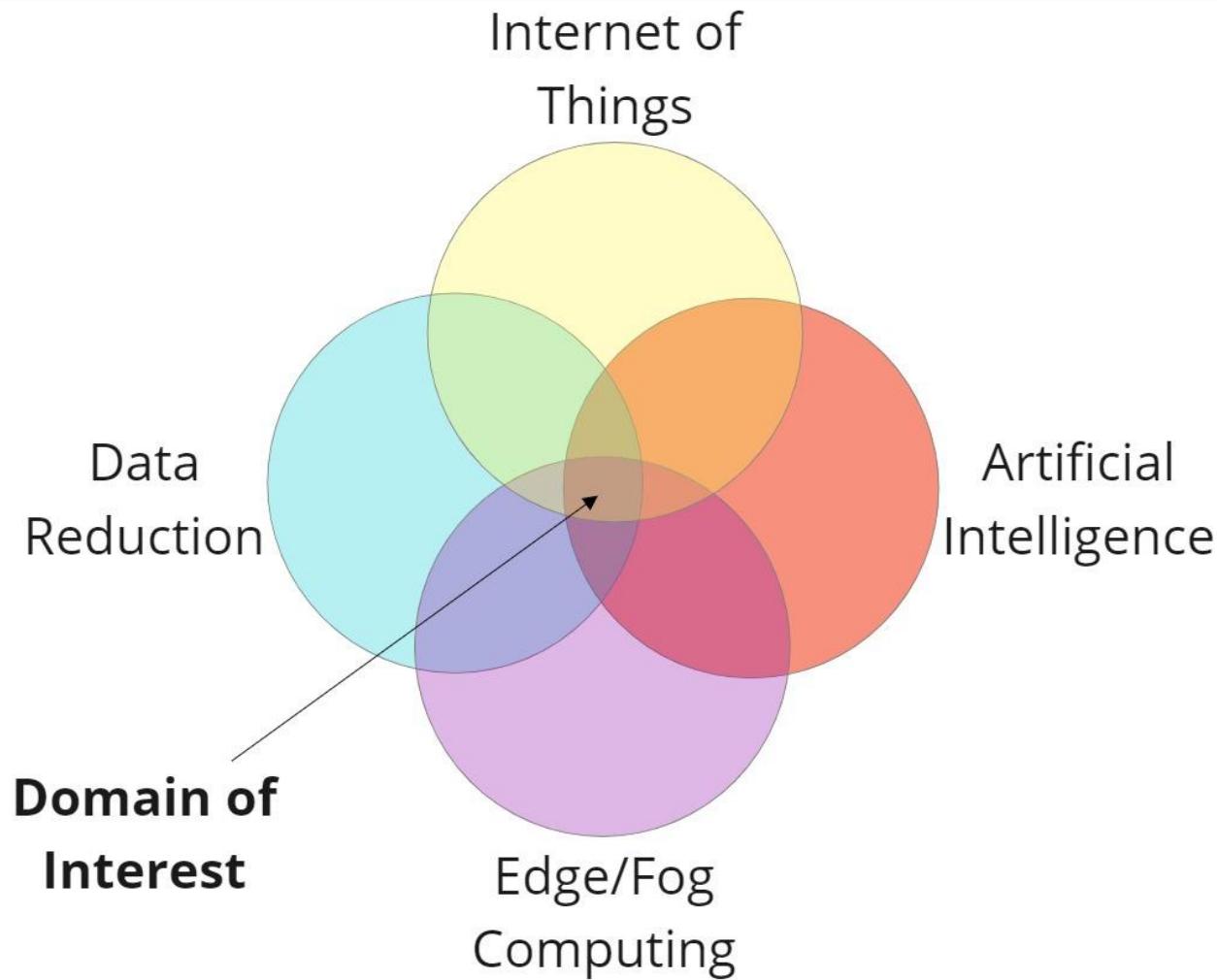
P&D
INESC
BRASIL





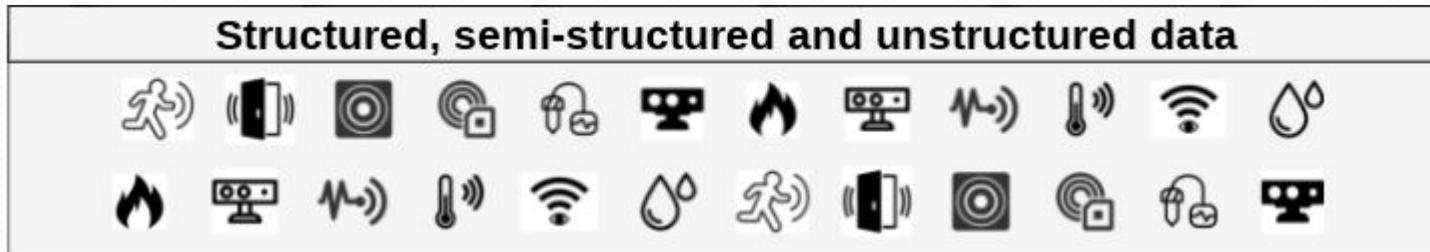
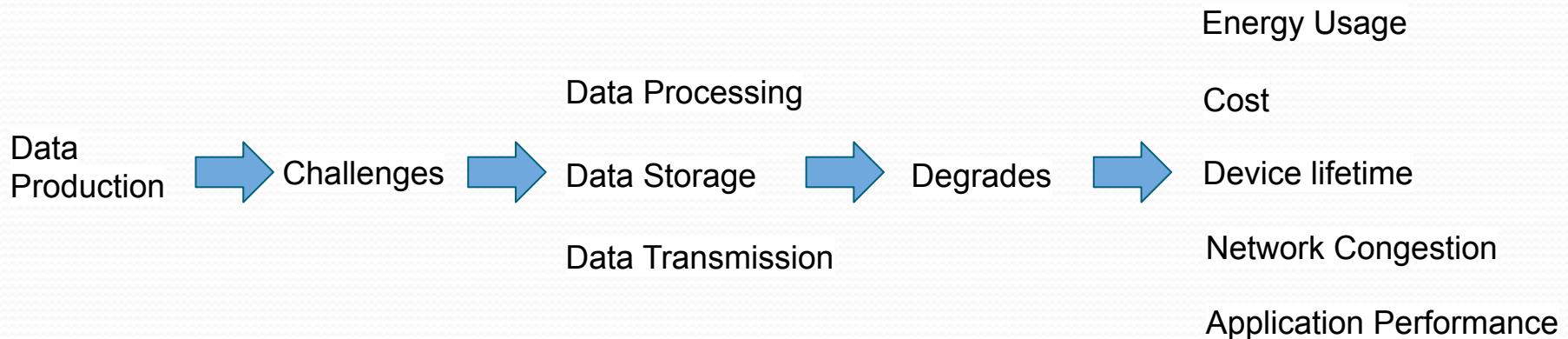
Ph.D. Project

Research Area



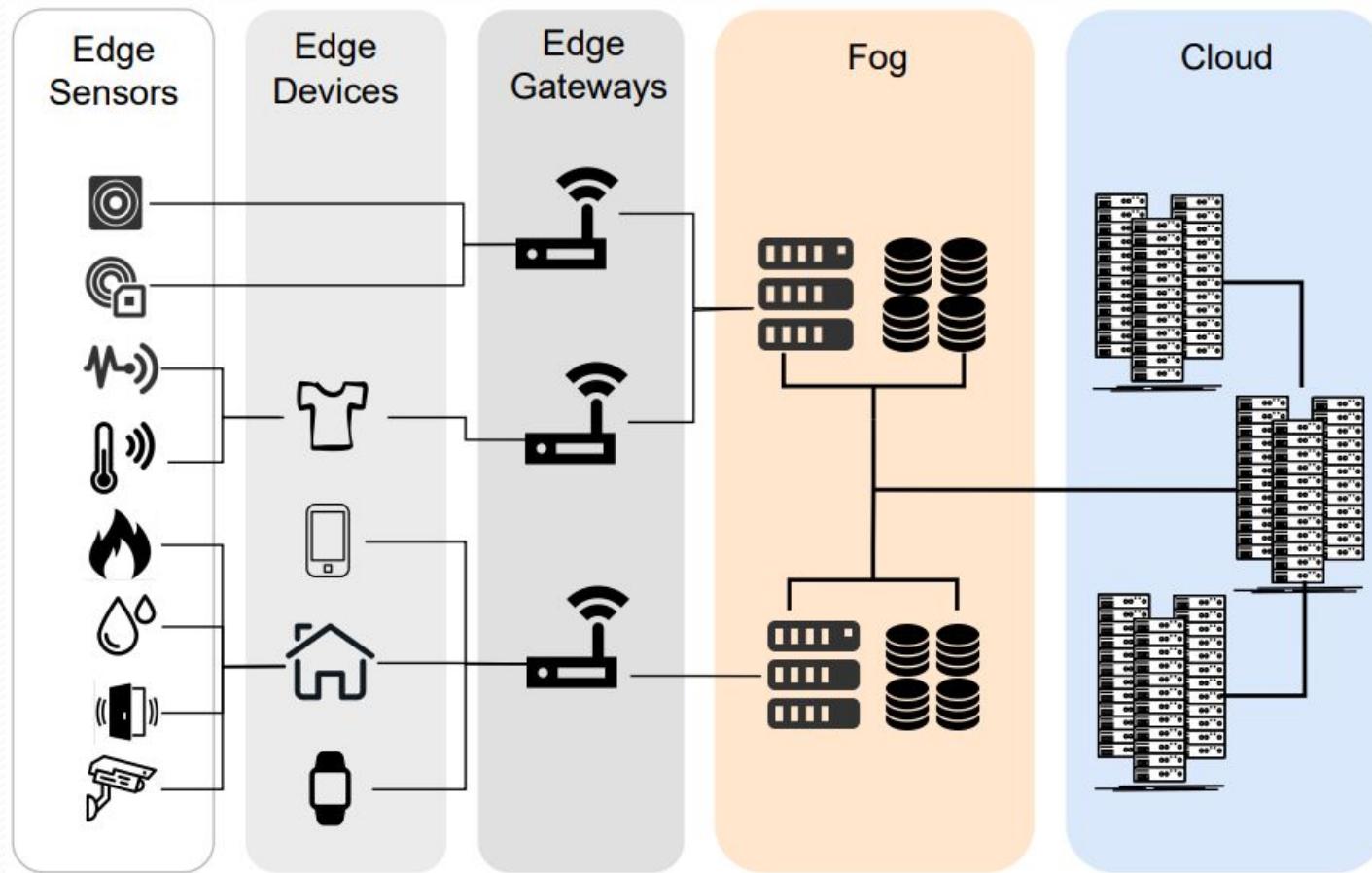
Introduction

Data overwhelming



Introduction

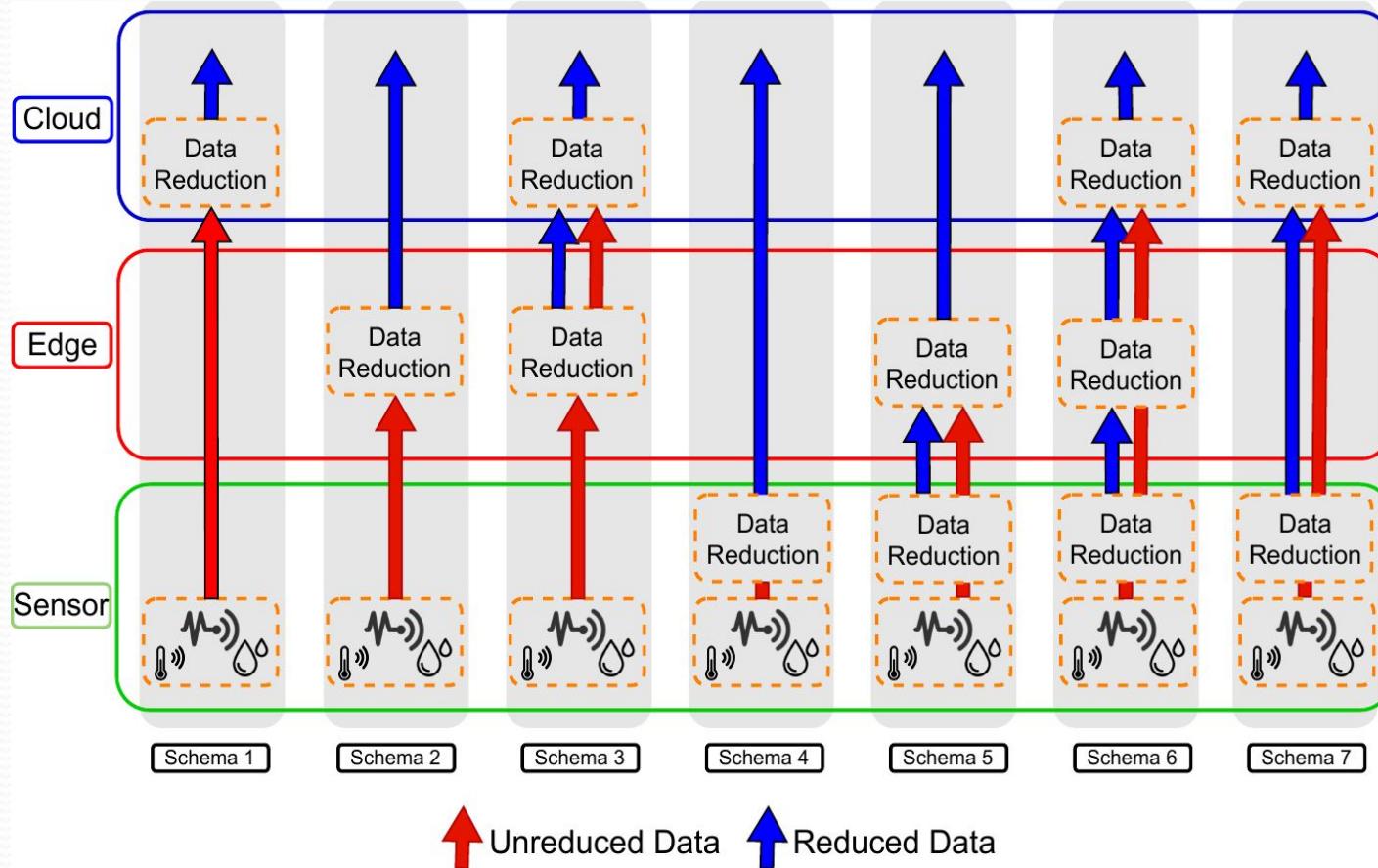
Problem Contextualization
IoT Architecture Layers



Introduction

Problem Contextualization

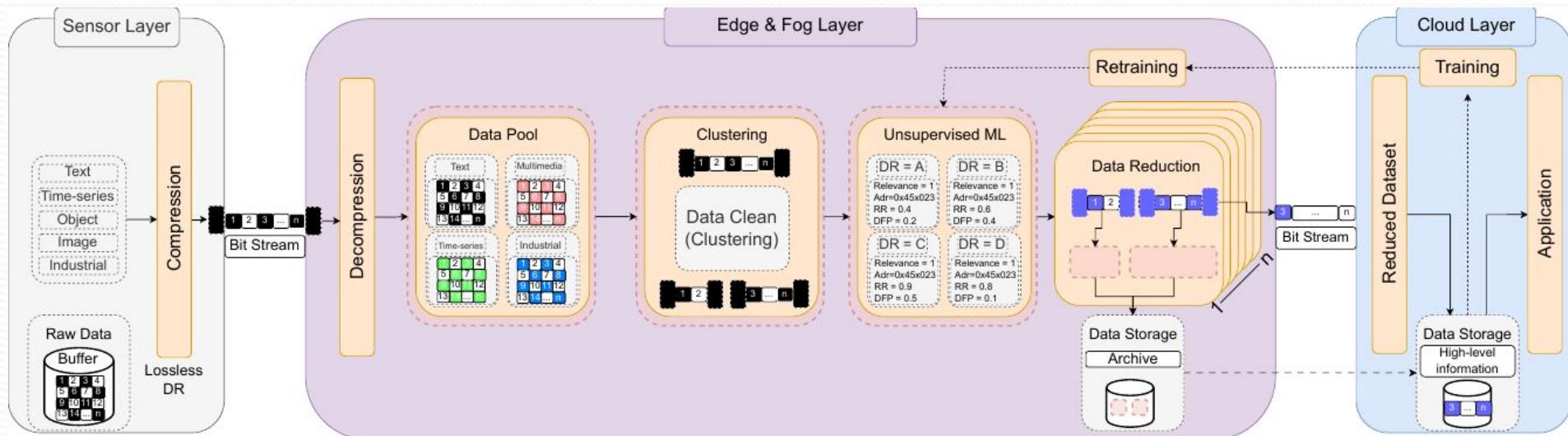
Data Reduction Distribution over the IoT Infrastructure



Solution

Proposal Framework

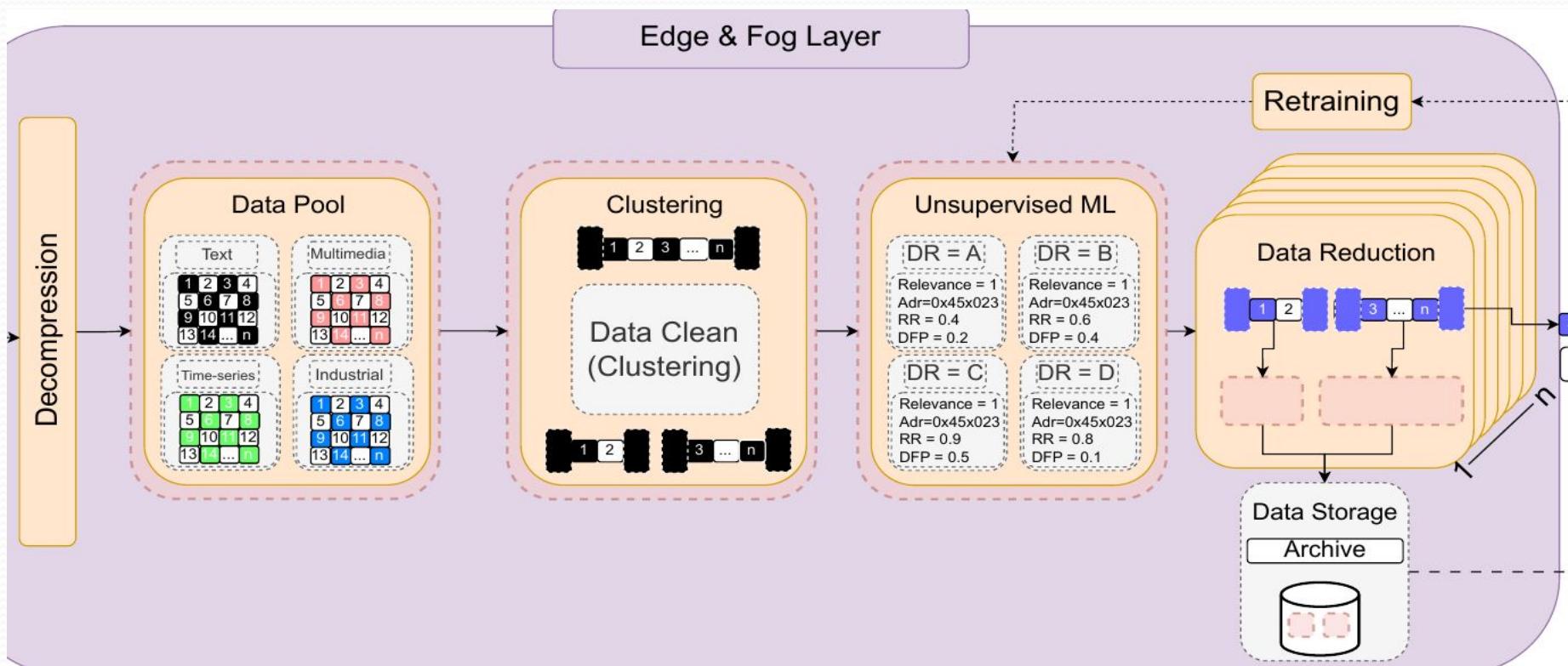
Edge Layer Core Blocks



Solution

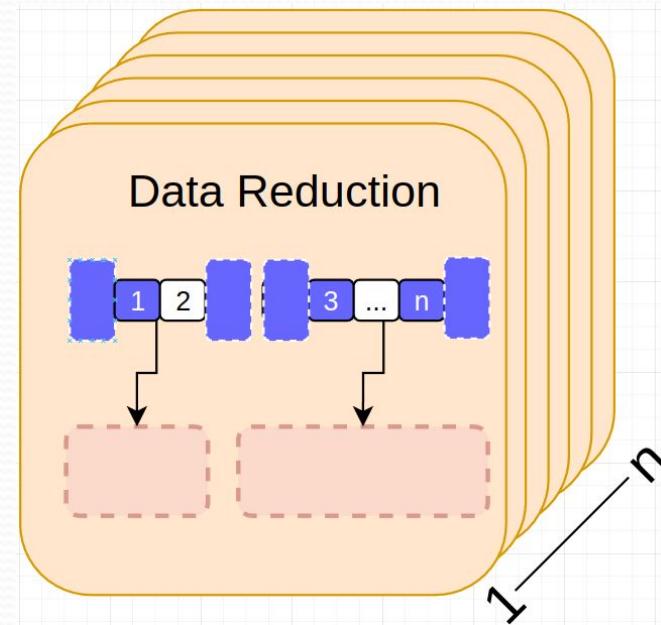
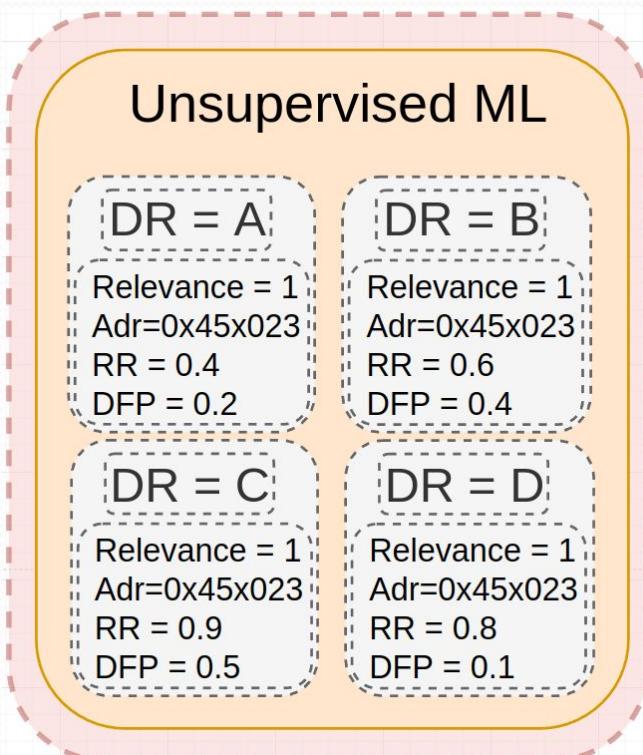
Proposal Framework

Edge Layer Core Blocks



Solution

Proposal Framework Edge Layer Core Blocks





Research at INESCTEC

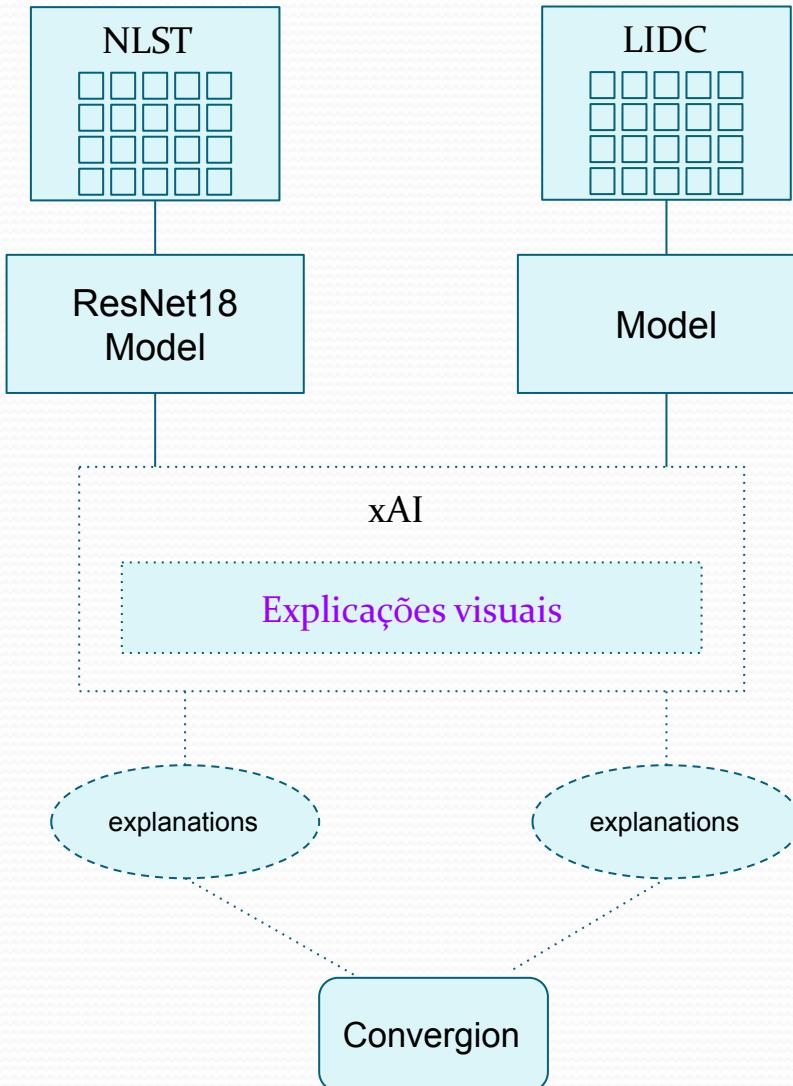


Explainable Artificial Intelligence (XAI) refers to the ability of an AI system to provide understandable and transparent explanations for its decisions or actions.

Traditional AI models, such as deep neural networks, are often considered black boxes because they make predictions or take actions without providing clear explanations for how they arrived at those results.

Post-Model

Solution Work



Explicações visuais

Vanilla Saliency
Maps

Integrated
Gradients

Image Gradients
Generation (raw)

Image Gradients
(Integral)

LRP

DeepLift

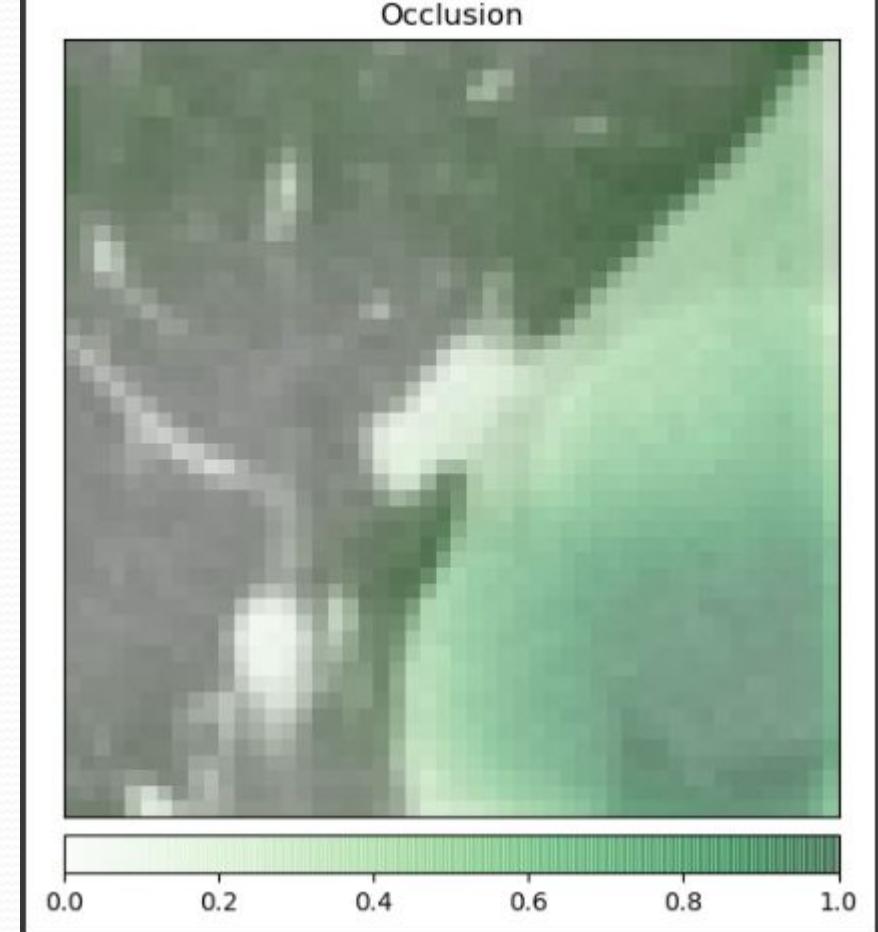
Convergion

Preliminary Results

Original Nodule



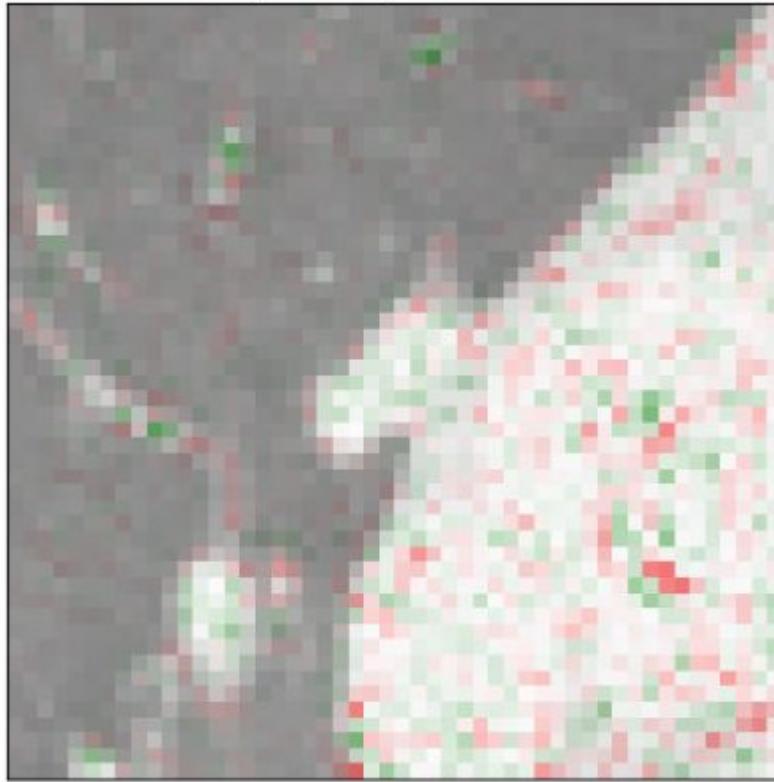
Oclusão



Preliminary Results

Integrated Gradients = All values

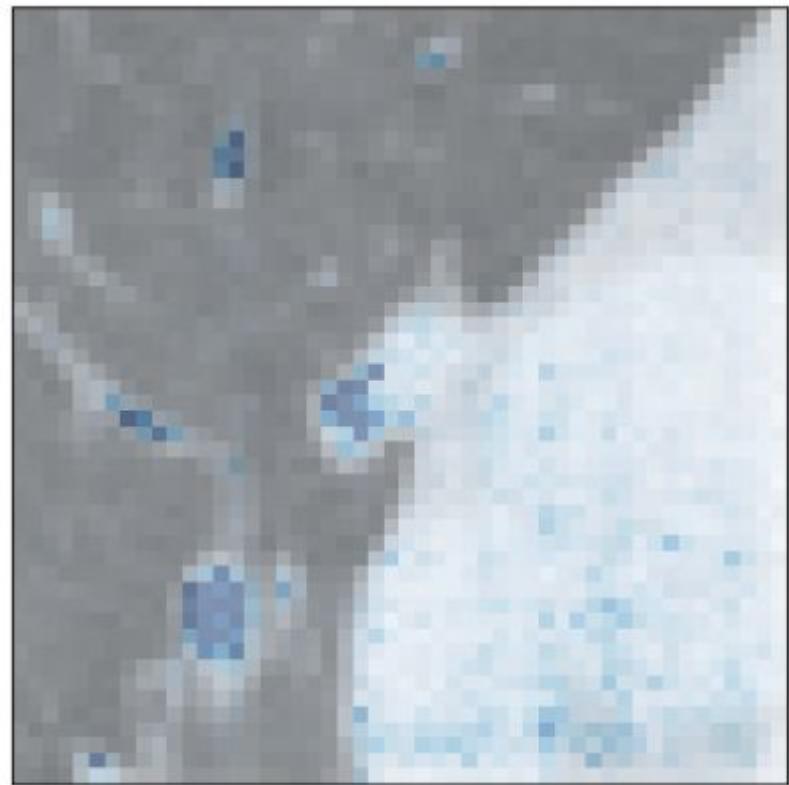
Overlayed Integrated Gradients



-1.00 -0.75 -0.50 -0.25 0.00 0.25 0.50 0.75 1.00

Integrated Gradients = Absolute Values

Overlayed Integrated Gradients
with SmoothGrad Squared

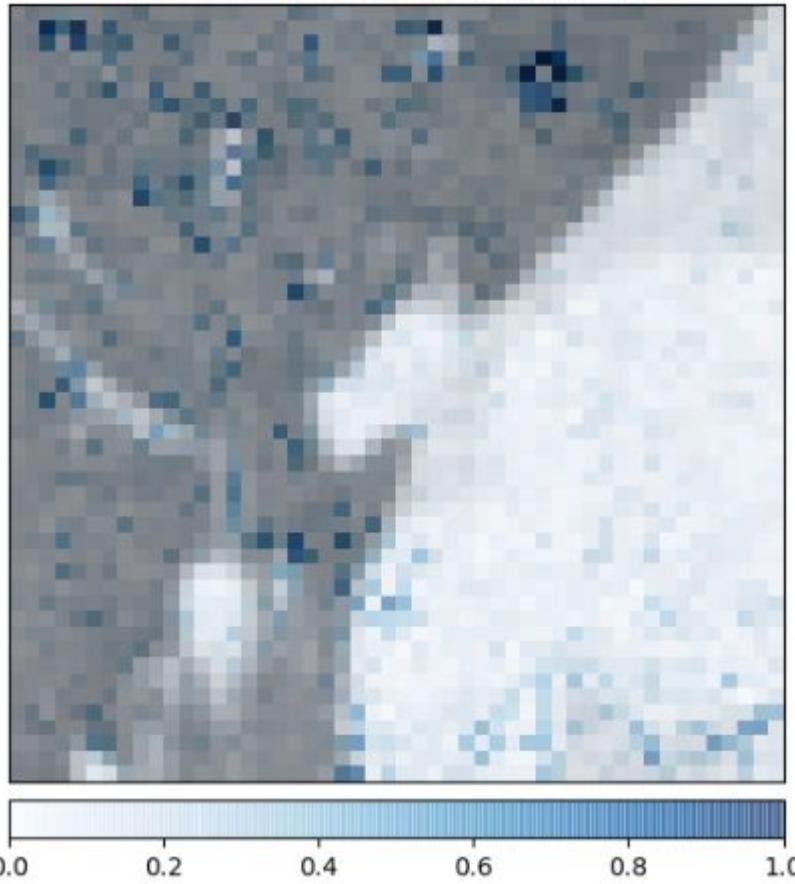


0.0 0.2 0.4 0.6 0.8 1.0

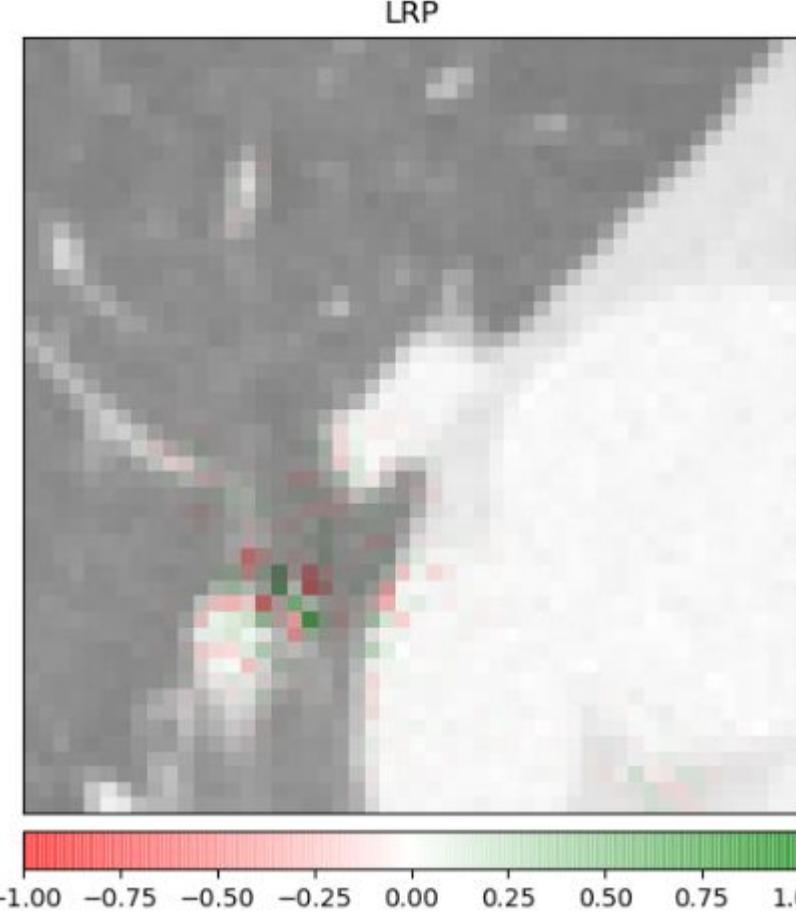
Preliminary Results

Saliency Maps

Overlaid Gradient Magnitudes



LRP



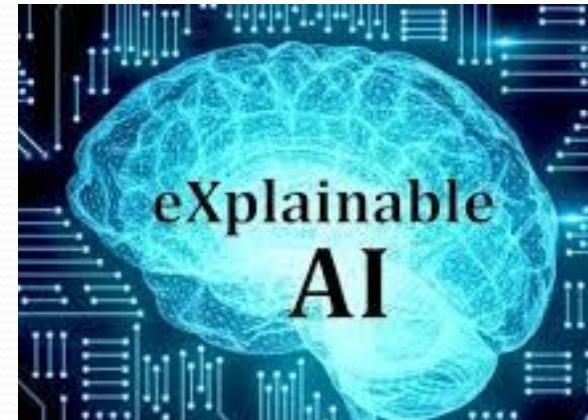


How to use this internship at the INESC
TEC in the Ph.D. project?

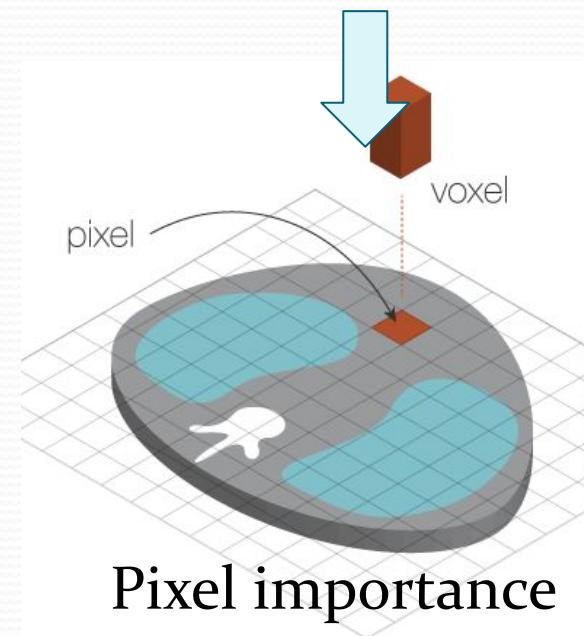
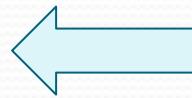
Identify the most important data or identify data that has no meaning and then reduce it.



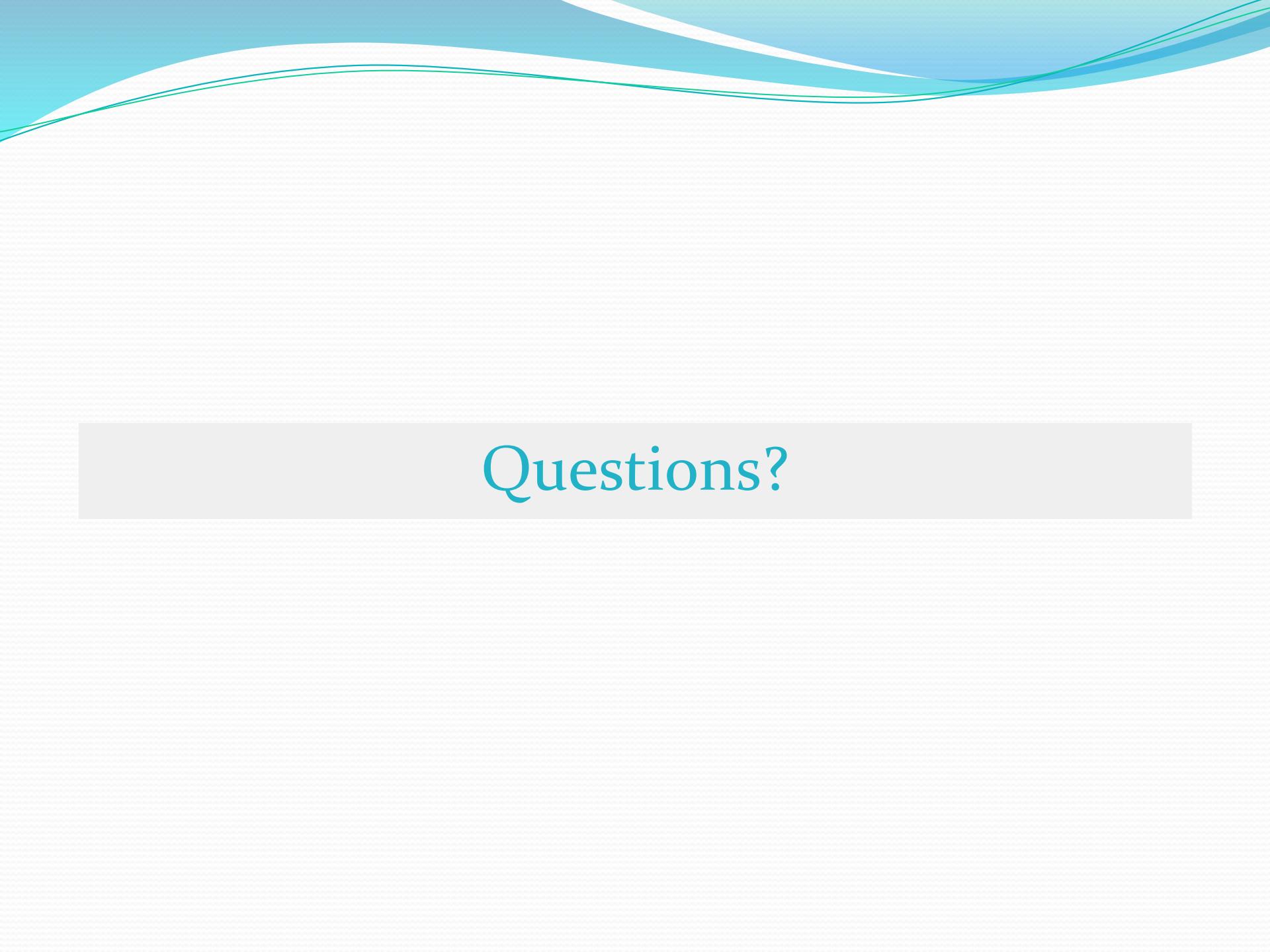
Image Data



Reduced Data



Pixel importance



Questions?