INSTITUTE FOR SYSTEMS
AND COMPUTER ENGINEERING,
TECHNOLOGY AND SCIENCE

INESCTEC

LIAAD
SCOPE AND ACTIVITY FOR 2021/22

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from knowledge
generation to
science-based
innovation

LIAAD RESEARCH LINES

- Machine Learning, AutoML and Human Artificial Intelligence
- Complex Data Analysis
- User Modelling and NLP
- Modelling and Optimisation
- Mathematical Modelling

INNOVATION ACTIVITIES/MAIN MARKETS AND APPLICATION AREAS

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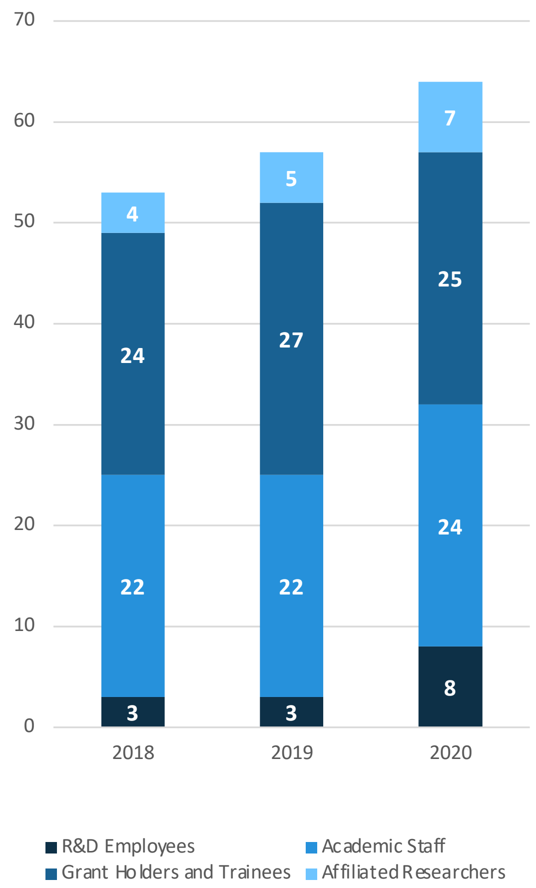
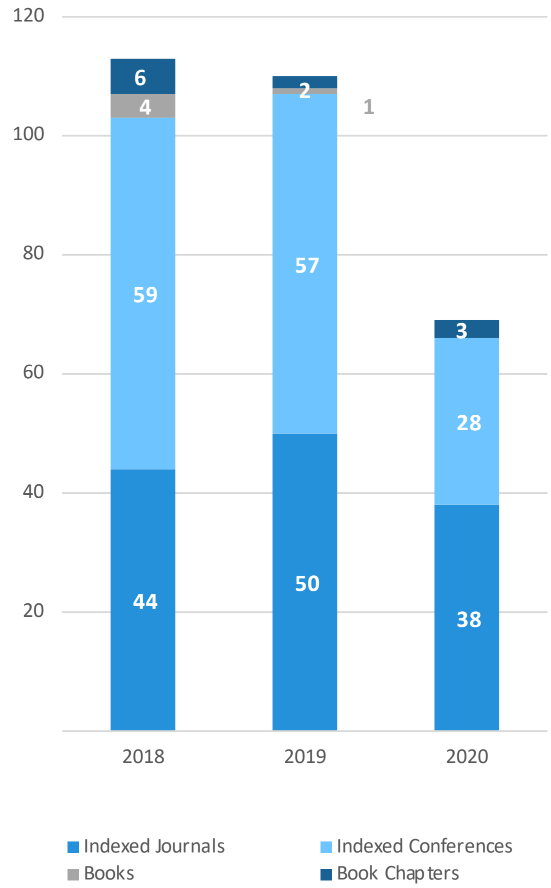
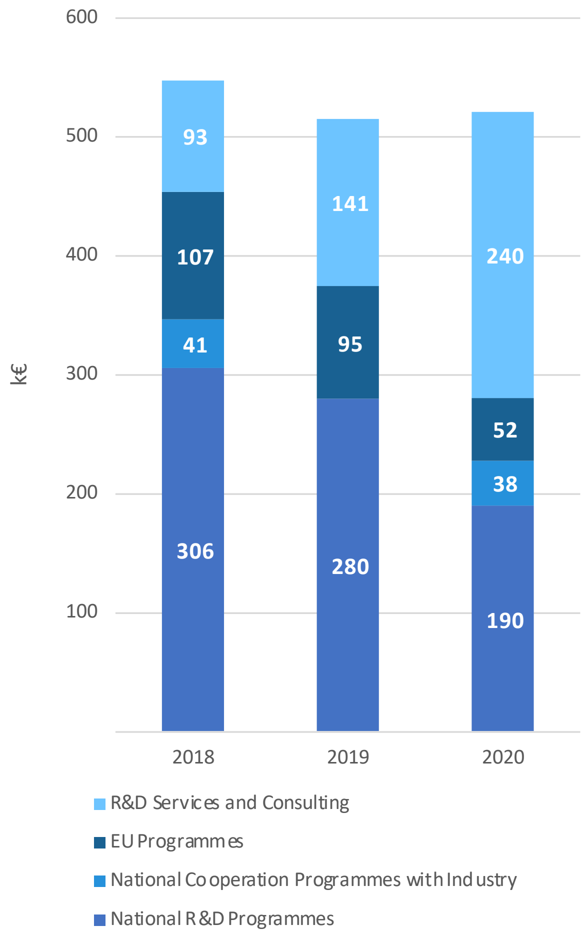
	TEC4AGRO	TEC4ENERGY	TEC4HEALTH	TEC4 INDUSTRY	TEC4SEA	Other
Recommender systems, personalization and behaviour modelling			x	x		x
Data science in action	x	x	x	x	x	x
Surveys and Data Analysis						x
Extracting information from text		x	x	x		x
Event and Anomaly detection, Predictive maintenance	x	x		x		x

Other markets or application areas: Media, Finance, Research and Consultancy

LIAAD - TEAM AND ACTIVITY







OBJECTIVES AND THEIR ACHIEVEMENT IN 2021

Increase the number of **publications in high impact journals** and **conferences**

- 2021:
  - Q1 – Scopus (18 papers in 21/28), WoS (13 in 21/28)
  - Core A – 5 papers in 30

Promote **existing software** tools and demos

- CmH, Yake!, R packages

Increase the presence of the team in **international projects and events**

- HumaneAI-NET, micro-projects, Dagsthul, SERV-INT, DSAA

Increase the visibility of LIAAD as a **partner for knowledge transfer** in strategic domains

- Finance, Industry, Energy, Intelligence

Improve the **application readiness** of the team:

- PhD researchers
- PhD students in research lines
- Software packages and APIs

MAIN ACTIONS AND THEIR ACHIEVEMENT IN 2021

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Action	Objective	Expected Outcomes	Calendar
Organisation of DSAA conference in Porto	Visibility, internationalisation	Increased Networking	October
Organisation of the workshops Text2Story@ECIR, AI4Narratives@IJCAI, ORSUM@Recsys	Visibility, internationalisation	Increased Networking	January, April and August
Demo Tellmestories at Arquivo.pt and other visible software available to the community	Visibility, internationalisation	Scientific and Knowledge Transfer Opportunities	April
Organise a half a day event to promote data science and modelling in the financial domain	Visibility for knowledge transfer	5 projects in the domain of finance in 2021 and 2022	2021 and 2022
Map the skills of PhD grantees	Improve project readiness	Increased participation of PhD grantees in knowledge transfer projects	March

LIDTA@ECML/PKDD

FLAGSHIP PROJECTS UNDER WAY OR TO BEGIN IN 2021/2022

- HumaneAI-Net (PUE-H2020)
  - Human-centric Artificial Intelligence
- XPM: Explainable Predictive Maintenance (CHIST-ERA)
  - Explainability, Predictive Maintenance
- EKOED (SERV-INT, 2022)
  - Natural Language Processing
- Conta-me Histórias (Award, cooperation)
  - NLP, Yake!

MAIN COLLABORATIONS WITH OTHER CENTRES

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CBER
- AgWearCare

CESE
- Produtech4S&C
- OnlineAIOps
- BI4UP
- SADCoPQ
- SSPM

CEGI
- MINE4HEALTH

CEGI, CESE
- Transformer4.0
- FIN-TEC

CITE, CSIG
- NGCrAI

CPES
- Argos

CSIG
- SigiPro
- Text2Story
- RECAP
- AI_SOV (EIT Manufacturing)

CRIIS, CSIG
- PortXXI

CRACS, CSIG
- PT.Pump-up

CRIIS, CSIG, CTM
- Continental FoF

HASLAB
- SIS
- CloudAnalytics4Dams
- AIDA
- SLSNA
- SKORR

MAIN EXTERNAL PARTNERS

AutoML, project **MetaFLow**

Clinical and genealogical data, project **PAF-ML**

Natural Language Processing, **MINE4Health**

Fault detection, predictive maintenance, project **FailStopper**

Options market indicators(sensivities), project **RiskSens**

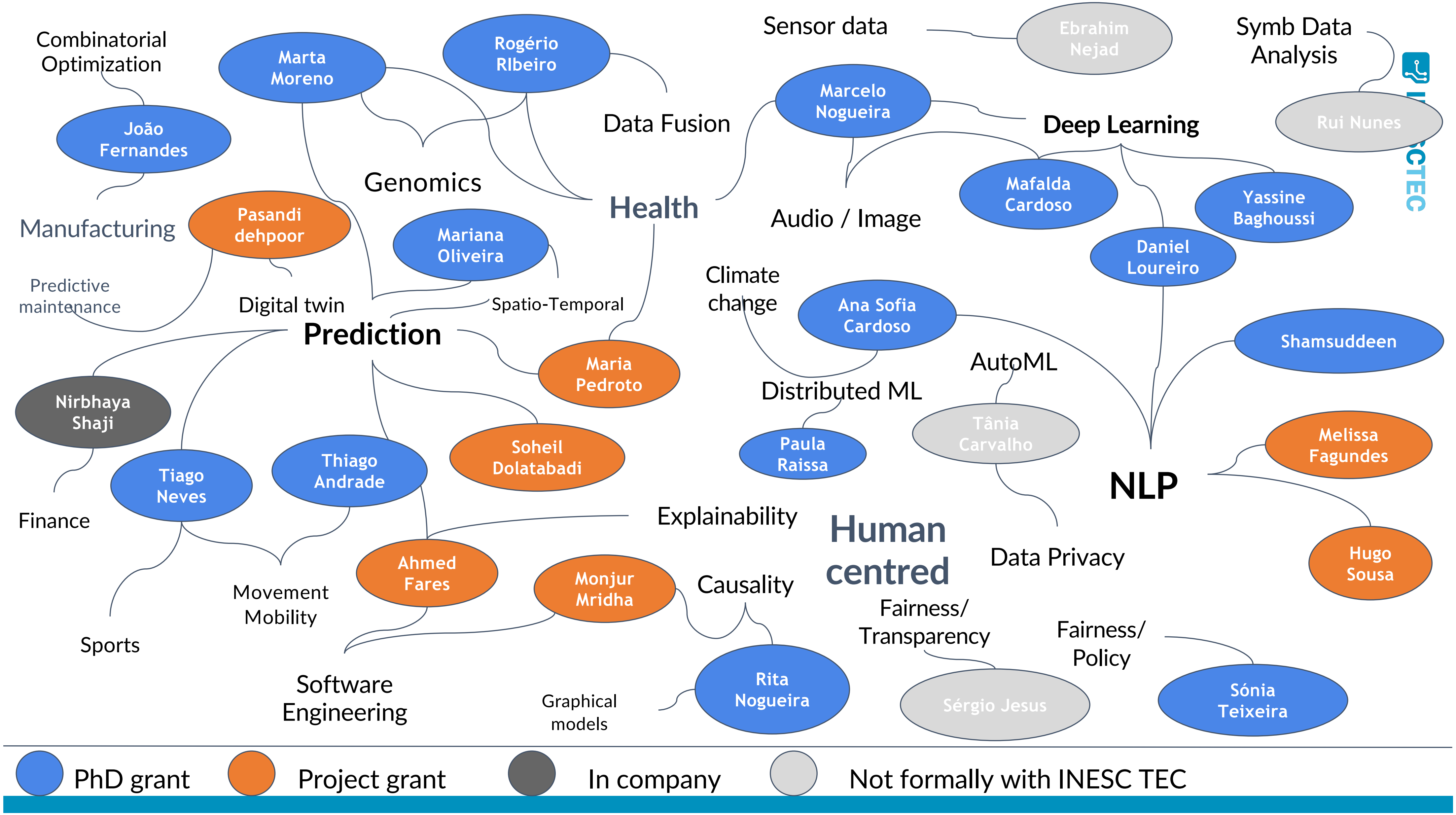
Federated Learning, **AIDA**

Data Science**, CloudAnalytics**

Software test automation, project **RUTE**

ML services over power transformers, project **Tranformer4.0**

Complex Networks, Personlisation


Combinatorial Optimization
Marta Moreno
Rogério RIbeiro
Sensor data
Ebrahim Nejad
Symb Data Analysis
Data Fusion
Marcelo Nogueira
Deep Learning
Rui Nunes
João Fernandes
Genomics
Health
Audio / Image
Mafalda Cardoso
Yassine Baghoussi
Manufacturing
Pasandi dehpoor
Mariana Oliveira
Daniel Loureiro
Predictive maintenance
Digital twin
Spatio-Temporal
Climate change
Ana Sofia Cardoso
Prediction
Shamsuddeen
AutoML
Maria Pedroto
Nirbhaya Shaji
Distributed ML
Tânia Carvalho
Soheil Dolatabadi
Paula Raissa
Melissa Fagundes
Tiago Neves
Thiago Andrade
NLP
Finance
Explainability
Human centred
Data Privacy
Ahmed Fares
Monjur Mridha
Hugo Sousa
Movement Mobility
Causality
Sports
Fairness/ Transparency
Fairness/ Policy
Software Engineering
Graphical models
Rita Nogueira
Sérgio Jesus
Sónia Teixeira
PhD grant
Project grant
In company
Not formally with INESC TEC

CHALLENGE 2022-2025

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Produce AI systems to empower human capabilities for a better society

Improve the trustability and transparency of AI systems, providing increased cognitive power, including the ability to link perceived language, images, sounds and other signals to larger bodies of knowledge, enabling causal inference. Provide AI systems with controlled autonomy having the ability to explain and trace their actions, as well as to interact with human agents and society in safety and respecting human dignity and fairness. Enable AI systems to benefit from learned and human provided models to accelerate the safe application of AI.