

Leuven.AI

The KU Leuven Institute for AI

*kick-off meeting*

*March 2, 2020*

Luc De Raedt

# What is AI ?

- Nobel prize winner - Herbert Simon :
  - machines that exhibit behaviors that would be regarded intelligent if they were exhibited by human beings.
- Many questions about AI (AI is interdisciplinary):
  - What is regarded as intelligent behaviour ?
  - How can we make such machines ? for general AI ? for specific applications ?
  - What are the limitations ?
  - What are the implications for our society ?
  - Should we make such machines ?
- A lot of attention in the media and in our society

# Impact of AI

- Many recent breakthroughs in AI, mostly (but not only) in machine learning
- “AI is the new electricity” (Andrew Ng)
  - Much like the rise of electricity, which started about 100 years ago, AI will revolutionize every major industry. (Industry 4.0)
- There is a lot of hype; the expectations are often unrealistic, but AI is here to stay.
- There is a really high potential for “beneficial” AI, but also some caveats
- A broad and interdisciplinary view on AI is needed (AI  $\Leftrightarrow$  Deep Learning, AI  $\Leftrightarrow$  Everything)
- This is the momentum for AI

# AI at KU Leuven

- KU Leuven has
  - one of the oldest and best-known master of AI programmes (since 1988, now 300 students)
  - research excellence in AI in almost all areas of AI, across different labs (e.g., 8 ERC projects, etc.)
  - vibrant students and research community
    - **(60 ZAP, 100s of PhD Students, 500 Master Students in AI)**
- but we could do more together and be more united !
- This is the right time for a KU Leuven Institute on AI
- The idea was launched about 2 years ago, now we are finally taking off ...

# Mission

- **Unite AI** and its renowned **AI experts** at KU Leuven in an interdisciplinary institute of excellence.
- **Foster AI research** by providing a forum for exchanging ideas and for initiating projects and collaborations on AI.
- **Foster AI education** by offering courses and contributing to education programmes.
- **Offer expertise on all aspects of AI**, including on the possibilities and limitations of AI and its implications from a philosophical and ethical, legal and societal perspective (ELSI).
- **To promote and represent the Leuven AI community** both internally and to the outside world
- **To obtain sustainable funding** for organising and supporting all this.

# Foster AI Research

- Research Lines :
  - What ?
    - areas with a critical mass and expertise in Leuven.AI,
    - a high potential for collaboration (if not already in place)
  - How ? bootstrapping via common seminar series ... (watch out leuvenainews and website)
  - Three standard research lines
    - Machine Learning and Data Science
    - Language, Vision and Speech
    - Reasoning, Acting & Decision Making (including robotics and hardware)
  - Two special ones
    - Applications of AI
    - Philosophical and Ethical, Legal, and Societal Implications of AI (ELSI)

# Foster AI Research &

- Research Line:
  - **Philosophical and Ethical, Legal, and Societal Implications of AI (ELSI)**
  - Leuven.AI wants to actively participate in the AI debate and take position
  - Various initiatives are starting up:
    - Metaforum will prepare a vision text on AI
    - Discussions around policy documents by the HLEG Europe
      - (next one planned soon ... )
    - Interest in these topics by groups of visitors



# Foster AI Research

- Research Line **Applications**
  - Three key areas identified:
    - bio-medical, engineering and education technology
  - Key research goal of Leuven.AI:
    - increase the number of applications of AI across KU Leuven,
    - key research task for the Leuven.AI post-doc
  - Information & networking session for applications of AI@KU Leuven planned
- Setting up phase of Leuven.AI: focus on foundations,
- Next phase will be to expand towards application areas (affiliated members)



# Research Topics & Labels

<b>APPLICATIONS OF AI</b> <a href="#">SEE HERE</a>	<b>AGENTS &amp; AUTONOMOUS SYSTEMS</b> <a href="#">SEE HERE</a>	<b>BIOMEDICAL &amp; HEALTH</b> <a href="#">SEE HERE</a>	<b>REASONING</b> <a href="#">SEE HERE</a>	<b>PHILOSOPHY OF AI</b> <a href="#">SEE HERE</a>	<b>MATHEMATICAL APPROACHES</b> <a href="#">SEE HERE</a>
<b>BAYESIAN, PROBABILISTIC AND STATISTICAL APPROACHES</b> <a href="#">SEE HERE</a>	<b>BIG DATA AND DATA SCIENCE</b> <a href="#">SEE HERE</a>	<b>COMPUTER VISION</b> <a href="#">SEE HERE</a>	<b>LANGUAGE AND SPEECH</b> <a href="#">SEE HERE</a>	<b>PRIVACY, DATA PROTECTION, AND AI</b> <a href="#">SEE HERE</a>	<b>EXPLAINABLE AI &amp; TRUST</b> <a href="#">SEE HERE</a>
<b>HARDWARE &amp; COMPUTER ARCHITECTURES</b> <a href="#">SEE HERE</a>	<b>ETHICS AND LEGAL</b> <a href="#">SEE HERE</a>	<b>MACHINE LEARNING</b> <a href="#">SEE HERE</a>			

# Flemish Impulsprogram on AI

## Three aspects

### 1. Strategic Basis Research

#### 4 Grand Challenges

KU Leuven involved in 3

### 2. Technology Transfer and Industrial Applications

### 3. Supporting activities (awareness, training, ethics...)

Education: Graduate School, Continuing Education, Raising Awareness

Knowledge Centre for Data & Society

HELP TO **MAKE**  
**COMPLEX DECISIONS**



**COMMUNICATE AND COLLABORATE**  
**SEAMLESSLY WITH HUMANS**



**EXTRACT AND PROCESS**  
**INFORMATION AT THE EDGE**



more information : Bart DE MOOR

# Foster AI Education

## **Junior Leuven.AI members:**

- Phd- and Post-doc days in Leuven.AI context
- First planned after the summer holidays
- Synergies with Flemish Impulsprogram to be exploited

## **Many requests and initiatives are being taken**

- Graduate school of the Flemish Impulsprogram
- UNA - 1EUROPE project with Data Science and AI as one of four focus areas
- Questions regarding education for industry, for the wide public, master programmes
- ...

# Offer expertise on all of AI

- Leuven.AI as a contact point for channelling requests
- Two subgroups of Leuven.AI
  - PhELSI — Philosophical and Ethical, Legal and Societal Perspective
  - Research — requests for collaboration

*The ambition is not to replace the activities of the individual labs and researchers, but rather to coordinate existing initiatives, create synergies, stimulate cross-fertilisation, and initiate novel, interdisciplinary AI activities at KU Leuven.*

# Promote & Represent AI @ KU Leuven

Main communication channels :

- Website : [ai.kuleuven.be](http://ai.kuleuven.be) or [leuven.ai](http://leuven.ai) (news and events also for the outside world)
- the **internal** newsgroup :
  - [leuvenainews@ls.kuleuven.be](mailto:leuvenainews@ls.kuleuven.be) daily digest of interesting news
    - subscription management via (only via kuleuven address, about 150 right now)
      - <https://ls.kuleuven.be/cgi-bin/wa?SUBED1=LEUVENAINNEWS&A=1>
- internal + external newsletter : first issue after kickoff meeting
- other email addresses:
  - [leuven.ai@cs.kuleuven.be](mailto:leuven.ai@cs.kuleuven.be) (reach Stella, Wannes and myself)
  - [LEUVENAI@LS.KULEUVEN.BE](mailto:LEUVENAI@LS.KULEUVEN.BE) (all senior members of Leuven.AI)



# Membership

All members of Leuven.AI are affiliated to KU Leuven. Membership is free.

Three types of members:

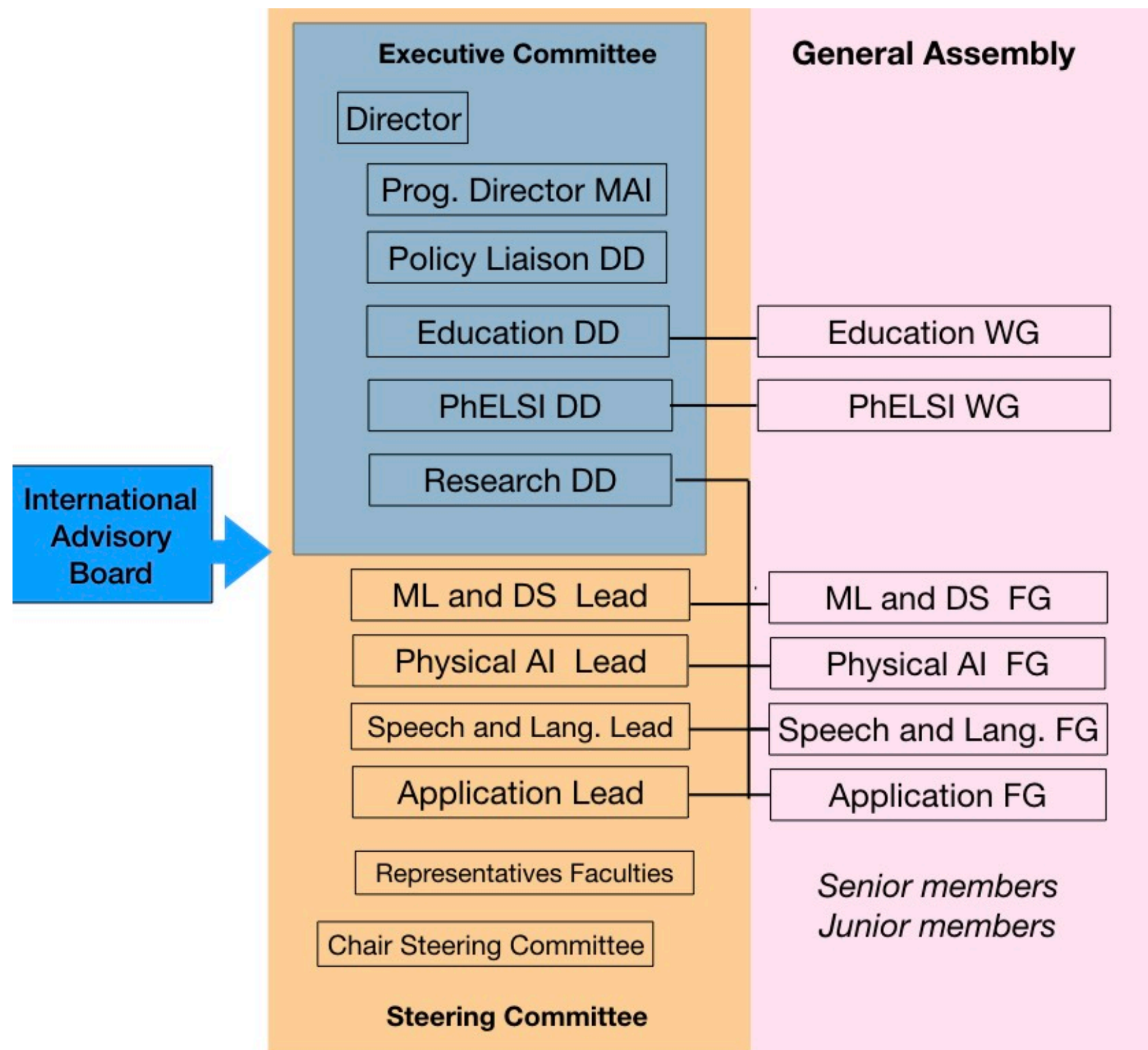
1. Senior members are active AI researchers or practitioners. They are senior research staff (either ZAP or Research Management Staff) (about **60 senior members right now**)
2. Junior members are active AI researchers or practitioners. They are post-docs or PhDs student.
3. Affiliated members are interested in artificial intelligence and its applications but have a different research focus.

Application for senior membership via providing a list of AI related activities to [leuven.ai@kuleuven.be](mailto:leuven.ai@kuleuven.be), and for junior and senior members, a commitment to contributing to Leuven.AI. (We plan to feature post-docs on the website.)

Expectation **to mention Leuven.AI in relevant AI publications** and presentations, as an additional affiliation or in the acknowledgements section, there is also a **special collection of publications available in LIRIAS for Leuven.AI** (as a virtual collection).

Information sessions for potential new members are planned after Easter, as well as an Open call for membership.

# Governance



## Executive Committee:

Director : Luc De Raedt  
 Deputy - Policy Liaison : Bart De Moor  
 Deputy - Research : Tinne Tuytelaars  
 Deputy - Education : Frank Van Eynde  
 Deputy - PhELSI : Peggy Valcke and Roger Vergauwen  
 POC Director : Johan Suykens

## Research Lines LEADS :

PhELSI : Peggy Valcke / Roger Vergauwen  
 Machine Learning and Data Science :  
 Jesse Davis / Matthew Blaschko / Lieven De Lathauwer  
 Acting, decision making and reasoning :  
 Herman Bruyninckx / Marian Verhelst / Patrick De Causmaecker  
 Speech and Language : Frank Van Eynde, Luc Van Gool  
 Applications : Joost Vennekens / Marc Van Hulle / Alexander Bertrand

## Education Committee :

Danny De Schreye, Frank Van Eynde, Lieven De Lathauwer,  
 Johan Suykens, Luc De Raedt, Piet Desmet, Bart De Moor



# Closing

- This is the momentum of AI —
  - AI is viewed as the new electricity (Andrew Ng)
  - It is invading all aspects of our society
  - It is here to stay
- AI at KU Leuven
  - 30 years ago: visionary initiatives in AI (Master of AI program, various labs)
  - 2020: a very strong position in research, in education, and in PhELSI aspects
  - we need also bold decisions for the future !