CLAIRE

Additional comments on the EC AI Consultation Survey

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The Hague, NL

This document provides additional input from the Confederation of Laboratories for Artificial Intelligence Research in Europe (CLAIRE; see also http://www.claire-ai.org) on the recent AI Consultation Survey conducted by the European Commission. As a non-profit international association under Belgian Law, CLAIRE represents 385 groups and organisations throughout Europe that are engaged in AI research, with a total of over 20 000 research and support staff.

CLAIRE reached out to its members and supporters and encouraged them to participate in the survey and to provide additional information. A careful analysis of the responses has resulted in the following observations and recommendations:

1) Considering the existing four ICT-48 networks of centres of excellence, as well as the strengths and needs of AI research and innovation in Europe, we identified the following as the highest priorities for additional networks of centres of excellence (NoEs):
    - Next Generation of Smart Robotics
    - Greener AI
    - Sparking the Edge-to-Cloud AI Revolution

2) While the other topics covered by the survey, notably Next Generation AI, Human-AI Augmentation/Collaboration, Trustworthy AI, and Safe and Secure AI, are important, they are covered to a significant extent by the existing NoEs established under ICT-48-2020: AI4Media, ELISE, Humane-AI-Net and TAILOR. Establishing new NoEs with mandates that are covered by existing NoEs would be ineffective and risk further fragmentation of the AI community. We recommend that the Commission strengthens existing NoEs rather than establishing competing ones. Growing the existing networks would also be an important move to further reduce the fragmentation of the community.

3) Within the seven priority areas mentioned in the survey, the following topics are of particular importance for maintaining European excellence in human-centred, trustworthy AI. (The most important topics are listed first):
    - Next Generation of Smart Robotics: Multi-modal perception; Real-time, continual robot learning (including perception, manipulation, locomotion, navigation etc.); Cognitive robotics
    - Greener AI: Energy-efficient ML; Energy-efficient Data storage; Energy-efficient reasoning; Energy-efficient optimisation; Sustainable AI
    - Sparking the edge-to-cloud AI revolution: Continual and data-efficient learning at the edge; Federated learning; AI hardware
    - Next-generation AI: Automated AI (including AutoML); Hybrid AI (including neural-symbolic integration); Continual/lifelong learning; Learning from online streams of non-iid data

- Human-AI Augmentation/Collaboration: Modelling, recognising and reasoning about user intent; Task allocation in human-agent teams; Ad-hoc human-agent collaboration; Small data (inspired by the human ability to learn from small amounts of data, and the importance of such settings, e.g., in the context of rare diseases or events)
- Trustworthy AI: Certification and performance guarantees; Transparency; Human agency and oversight; Accountability; Functional guarantees
- Safe and Secure Privacy-Preserving AI: Synthetic data generation; Certification and performance guarantees; Privacy-preserving ML; Learning with safety guarantees; Verification and validation of AI systems

4) Several important topics were not identified by the survey and deserve dedicated, large-scale support:
    - Functional and performance guarantees (theoretical and statistical) for AI systems (this overlaps with, but goes beyond, Safe and Secure AI)
    - Complex Systems and Social Simulation
    - Natural Language Processing/Language Technologies, which are of key importance to Europe and deserve a more distinct focus than provided by the current NoEs.
    - AI to Accelerate Scientific Breakthroughs / AI for the Sciences

5) It is of crucial importance to strengthen and expand the current NoEs covering machine learning, reasoning, optimisation, multiagent systems and their combinations, as well as trustworthy AI. To build critical mass in these areas, substantial further investment is needed.

6) It is of crucial importance to ensure effective coordination and strong interaction between the existing and new NoEs towards a closely collaborating European AI community. To this end, there should be a joint coordination and integration mechanism that helps to bring together the different networks. It is important that this mechanism is given substantial weight.

To compete globally, for talent, economical impact and societal benefit, the European Commission needs to invest substantially and smartly into AI. It must leverage the diversity of European strength in AI, take better advantage of the talent pool across Europe and achieve better cohesion and coordination of the AI ecosystem. As we can see from the examples of globally recognised European institutions, such as CERN and ESA, cohesion, coordination and a common identity are key to global success.