LOI for Dana Frontiers – Active Inference Institute – January 31, 2025

Increasing the Accessibility and Applicability of Active Inference: Generative Playbooks and Open-Source Summer School Curriculum Development

Background

The world of neuroscience is continuously evolving and spawning new fields of study, including Active Inference, an integrated physics-based approach to modeling cognition and behavior as the active minimization of prediction error. We see a need for accessible and appropriate resources for learning Active Inference for different communities and education levels, and since 2021 have sought to address this gap with work at the Active Inference Institute. Currently there exist technical, academic, linguistic, and culture barriers to the dissemination of high quality open-source materials & cognitive modeling practices. The Active Inference Institute seeks to promote the rapid growth and adoption of cognitive modeling, in support of personalized neurotechnology, awareness of neurodiversity and cognitive security, and thriving entrepreneurship and government ecosystems. If we do not undertake this work to make Active Inference accessible to broad communities, we risk losing many valuable contributions of diverse publics to shape the future of cognitive modeling. Our values align with the goals of Dana Foundation to see neuroscience as an integrated and positive force in our society.

Goals

- Develop generative playbooks for open-source cognitive modeling, thus providing educational materials which empower communities to engage in Active Inference as learners, researchers, and practitioners.
- Develop an open-source curriculum and pilot a Summer School in 2025 to integrate our innovative online approaches with in-person opportunities, providing accessibility in this cutting-edge area and embedding community perspectives into the future of neuroscience.

Strategy

With Dana Foundation support we will undertake two key initiatives that build on our prior works: **generative playbooks** for target communities, and a first of its kind curriculum for an Active Inference **Summer School**.

First, we will **advance our work** **developing multi-language, multi-background, accessible materials and onboarding for cognitive modeling**. These materials and playbooks can support learners across educational levels or affiliations, including key target audiences: neuroscience researchers and trainees, educators, and policy-makers

(all represented by those already participating in the Institute, and thus able to provide valuable realistic feedback on the playbooks). Officers of the Institute will coordinate the co-creation of playbooks with members of our community through working groups. Contributing members will receive a stipend for their participation. Key target audiences are selected based on need from our members – often we encounter the scenario where people find out about Active Inference and seek to introduce it to their communities, but lack developed, targeted, sharable instructional materials. Playbooks will be shared with Institute and ecosystem advisors for quarterly feedback as we iterate and improve. The finished deliverables will be shared as an interactive website with our community (published as a pre-print, available on our website, and discussed in a YouTube presentation). Importantly the playbooks will remain versioned as a living document, as our community members apply them in their world, and provide critical feedback and improvements to foster adoption.

Second, we will **template a curriculum for a Summer School in Active Inference**, with the goal of bringing together adults with diverse backgrounds to shape the future of cognitive modeling and neuroscience tools. To meet the needs of learners and practitioners with various backgrounds we will design a course that teaches principles of Active Inference from multiple perspectives, including sociology, philosophy, mathematics and linguistics. The course will be designed by members of the Institute, many of whom have contributed to online courses (made public though our YouTube channel). Institute Officers and experts in our network will facilitate the development of educational materials, including planning group activities and methods for evaluation. The final version of the course will be applied to an in person Summer School course in 2025. Importantly, the template for a Summer School will be available publicly on our website, so that groups across the world can start their own summer course, thereby supporting global adoption and accessibility of Active Inference.

Deliverables

- Playbooks for Active inference adoption targeted to key populations (neuroscience graduate students, educators and policy-makers). Appropriate usage of generative AI to ensure materials are available in different languages, media, and levels of technical detail.
- A Summer School curriculum (open-source) in Active Inference for diverse backgrounds, in support of an in-person event to be held in 2025 & versioned over the coming years.

Evaluation

We will evaluate our progress with feedback from our Scientific Advisory Board, Board of Directors, and online/in-person participants. The playbook will have internal quarterly feedback as we develop it, with further interviews with the target groups who apply the

playbook. The Summer School curriculum will have internal feedback from our advisory board and Interns. We will also solicit feedback from Summer School participants in the form of surveys.

Timeline

Over the course of 9 months, we will create working groups for developing playbooks and coordinate the development of a Summer School curriculum (planned timeline: March-December 2025). Working groups will meet weekly and produce quarterly updates. Summer school curriculum will be created over 6 months, implemented and then integrated with feedback from participants over the following months.

Alignment

The Active Inference Institute's mission to improve accessibility, rigor, and applicability of Active Inference directly aligns with Dana Foundation's Frontiers program goal of strengthening neuroscience's positive role through collaborative engagement. Our project specifically addresses Dana's interest in developing practical engagement resources that empower practitioners to connect different communities and build trust-based relationships. Through our educational programs and community-driven approach, we create bridges between theoretical neuroscience and diverse stakeholders, including researchers, practitioners, and the broader public.

Our work fundamentally aligns with Dana Foundation's mission to advance neuroscience that benefits society and reflects the aspirations of all people. Like Dana's emphasis on multidirectional community engagement, our Institute fosters participatory learning and development of Active Inference applications across disciplines. Our open-science approach and commitment to making complex neuroscientific frameworks accessible mirrors Dana's values of inclusivity and public engagement. By developing educational resources and fostering collaborative projects, we help ensure that advances in theoretical neuroscience are pursued responsibly and thoughtfully while building capacity for communities to apply these insights to address their priorities.

Budget

Total: $100,000

- $45,000 for personnel for the Summer School curriculum initiative.
- $45,000 for personnel for the Cognitive Modeling Generative Playbooks initiative.
- $10,000 for computing resources and online subscriptions supporting both initiatives