The Resilient AI: A "Human-Centred" Framework for "AI for Good"
A Joint Research Proposal for Amii, the Alberta Machine Intelligence Institute

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Executive Summary

This document proposes a non-commercial, open-source AI system designed to align directly with Amii's core vision of **"AI for Good and for All."**

The project's core, **"AI without Surveillance,"** offers a proven technical framework that directly implements Amii's **"human-centred approach"** to technology. It is a deployable, ethics-based AI that serves society's most vulnerable.

The initiative centers on two components:

1. **A 54KB Humanitarian AI:** A "Human-Centred" AI that functions as a **single 54KB HTML file**[1111]. It operates entirely offline to protect vulnerable populations (e.g., children with disabilities in disaster zones) without data extraction[2222].
2. **A 21KB "Dual Brain" PoC:** An "Approachable" technical testbed. It is a **"white-box" laboratory** for **Reinforcement Learning (RL)** and **AI Safety**—Amii's core research strengths.

An Initiative Vetted for Global Standards

This is not just a concept. The initiative has undergone a **three-week official review by the Government of Luxembourg**[3333], validating its ethical framework against rigorous EU standards (GDPR) and confirming its readiness for a high-level academic partnership.

This proposal offers Amii a unique, low-risk opportunity to bridge its world-leading technical research in RL with its foundational "AI for Good" mission.

The "Why" — Aligning with Amii's Core Values

This project's "Ethics-by-Design" architecture provides a tangible, technical implementation of Amii's core philosophy.

Amii's Core Value	This Initiative's Technical Implementation (The "How")
"AI for Good and for All"	**A Humanitarian & Accessible Model:** The 54KB AI is designed as a life-saving tool for high-risk, low-resource environments (e.g., disaster zones, refugee camps)[4444]. It runs on recycled smartphones and solar power, ensuring its benefits reach *all*.
"Human-Centred Approach"	**Ethics & Rights by Design:** The architecture is structurally built upon the **UN Convention on the Rights of the Child (UNCRC)** and the **UN Convention on the Rights of Persons with Disabilities (CRPD)**[5555]. It is a technical framework that *serves* humanity without *harvesting* it.
"Approachable" AI	**Ultimate Accessibility (Zero-Dependency):** The 21KB PoC operates with **pure JavaScript (ES6) and zero external libraries** (no TensorFlow/PyTorch)[6666]. It is a "living" AI testbed that any researcher or student can run, audit, and modify instantly in a web browser.
World-Leading Research (RL)	**A "White-Box" RL Laboratory:** The 21KB PoC provides a 100% transparent environment specifically designed for **Reinforcement Learning (RL)** and **AI Safety** research (see Page 3)[777777].

The "How" — A "White-Box" Laboratory for Reinforcement Learning & AI Safety

The **21KB offline "Dual Brain" AI** was developed as a technical proof-of-concept (PoC)[8888]. For Amii, this is not just a demo; it is a powerful, low-cost research tool.

Live Demo: https://mcorpai.org/Dual_Brain_Micro_AI.html

This code is a **"White-Box Laboratory"** for Amii's RL and AI Safety researchers. It allows for the complete audit and analysis of a hybrid learning system.

1. Algorithmic Minimalism ("Approachable" AI)

The AI operates with **pure JavaScript (ES6) and zero external libraries**[9999]. This "zero-dependency" approach proves that robust intelligence can emerge from pure algorithmic design, making it an ideal, accessible tool for graduate research and rapid prototyping.

2. "White-Box" Transparency (100% Auditable)

Unlike opaque "black-box" models, this AI's *entire learning policy* is stored in a human-readable `localStorage` table[10101010]. This allows researchers to **track, debug, and understand every single decision** the AI makes, providing a perfect testbed for Explainable AI (XAI) and governance studies.

3. Hybrid "Dual Brain" Architecture: A Novel RL/Safety Testbed

The 21KB PoC integrates three distinct intelligence systems that are central to modern AI research:

- **Reinforcement Learning (RL):** The AI learns autonomously from its successes and failures, updating its Q-table (policy) via `rewardHistory()`[111111111111].
- **Imitation Learning (IL):** When a human expert takes control (`humanTakeOver()`), the AI switches to an observer mode (`recordDecision()`) and learns, **"In this state, the human expert did this"**[12121212]. This provides a robust, built-in mechanism for human-in-the-loop value alignment.
- **Safety Simulation (Planning):** The AI does *not* blindly trust its learned RL policy. Before acting, it runs a "digital twin" physics simulation (`simulateSafety()`) to first verify that its intended action will not result in

a collision[1313131313]. **This is a coded ethical constraint and a core AI Safety concept.**

EU Vetting & Strategic Alignment

EU Vetting — Official Review by the Government of Luxembourg

This project is more than a concept — it has undergone a formal **three-week review by the Government of Luxembourg**, specifically by the Ministry of Foreign Affairs and the Luxembourg Development Cooperation Agency (LuxDev), coordinated through the Embassy of Luxembourg in Seoul[14141414].

The review confirmed that the project's **ethical framework fully aligns with the EU's GDPR and the fundamental principles of human dignity**. Although it ultimately fell outside Luxembourg's current *development cooperation* priorities, the government officially recognized the project's maturity and readiness for academic collaboration.

This vetting process confirms that the project is a low-risk, high-impact, and ethically robust framework, ready for partnership with a world-leading institution like Amii.

A Perfect Synthesis for Amii

This project provides a unique, practical bridge between Amii's two foundational pillars:

1. **Its "AI for Good" Mission:** The **54KB AI** provides a deployable, life-saving tool for the world's most vulnerable, directly "improving the human condition"[15151515].
2. **Its "RL" Technical Leadership:** The **21KB PoC** serves as a novel testbed for Amii's researchers to study **Imitation Learning, AI Safety, and "white-box" RL governance**[1616161616161616].

Application Scenarios for "AI for Good"

This AI's "offline," "low-power," and "sovereign" nature is uniquely suited to address complex humanitarian and social challenges.

Scenario 1: Climate Disasters & Network Failure (Wildfires, Floods)

- **Problem:** Power and communication grids are the first to fail during wildfires or floods, neutralizing conventional cloud-based AI systems[17].

- **Solution:** Combine recycled smartphones, solar chargers, and the 54KB AI to create **"independent digital sentinels"**[18]. This AI can detect rising water levels or smoke *without* internet[19], use its 'Safety Simulation' logic to minimize false positives, and send immediate alerts via low-power mesh networks (Bluetooth, LoRa).
- **Value ("AI for Good"):** Secures the "golden hour" for saving lives in remote and Northern regions where infrastructure is fragile[20].

Scenario 2: Agriculture & Digital Sovereignty (Imitation Learning in Practice)

- **Problem:** Remote farms or Indigenous reserves lack reliable internet, and sending community data to external corporate clouds raises critical **Data Sovereignty** issues[21].
- **Solution:** The 21KB PoC's **"Imitation Learning"** feature[22]. The AI, deployed on a low-cost device, observes a local farmer or Indigenous elder manually operating a valve[23]. It learns "the optimal irrigation know-how for this specific land" *from them*[24].
- **Value ("Human-Centred" RL):** The AI learns locally **without extracting or sending any data**, respecting local/traditional knowledge and privacy[25]. This is a real-world application of "human-in-the-loop" Reinforcement Learning.

Proposal for Collaboration

This project represents a low-risk, high-impact opportunity for Amii to advance its mission by supporting a framework that is both technically novel and ethically grounded.

Objective: A Joint Research Pilot (One Semester)

We propose a one-semester (3-4 month) joint supervised research pilot with Amii's faculty and researchers[26].

The goal is to leverage Amii's world-leading expertise to:

1. **Advance RL/Safety Research:** Use the **21KB PoC** as a "white-box" testbed to conduct novel research in AI Safety, Human-in-the-Loop governance, or Imitation Learning.
2. **Validate "AI for Good" Application:** Define an ethical protocol (aligned with Canadian REB standards) for a data-free field test of the **54KB humanitarian AI**.

3. **Jointly Publish Results:** Release the reproducible methodology and open-source toolkit, targeting a top-tier conference (e.g., **NeurIPS**) or journal, with a focus on "RL Safety" or "AI for Good"[27].

Call to Action

I would be honored to discuss a potential joint research pilot with Amii and, if convenient, to provide a brief live demonstration of the 21KB model's "Imitation Learning" system.

Project Portfolio Links:

- **Project Overview ("Dual Brain" AI):** https://mcorpai.org
- **Live Technical Demo (21KB PoC):** https://mcorpai.org/Dual_Brain_Micro_AI.html

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