**Please provide a statement detailing the careful consideration you have given to the ethical implications of the proposed research (where ethical issues may arise) and how you plan to address these over the course of your award:**

Ethical Considerations and Management Plan:

The proposed research on Network-on-Chip (NoC) optimization for AI accelerators involves technical work with potential ethical implications, particularly concerning data privacy, environmental impact, and the broader societal influence of AI.

1. Data Privacy and Security:

While this research does not directly involve personal data, it uses AI models and datasets for testing. To ensure ethical compliance, only anonymized, publicly available datasets will be used. AI models employed will focus solely on performance evaluation, with no processing of sensitive information. All data handling will adhere to the ethical guidelines of Trinity College Dublin and data protection regulations like GDPR, ensuring integrity and security throughout the project.

2. Environmental Impact:

A core goal of this research is to improve the energy efficiency of AI hardware, reducing the carbon footprint of AI systems. Through energy-performance trade-off analysis, the NoC optimizations proposed will aim to significantly lower energy consumption without sacrificing performance. This focus aligns with ethical responsibilities to foster environmentally sustainable technologies.

3. Societal Impact of AI:

Enhanced AI hardware efficiency can impact various sectors, raising issues of fairness and transparency. To address these concerns, I will engage with interdisciplinary discussions on AI ethics, ensuring that hardware-level optimizations align with ethical AI practices and societal values. This will help guide the research to support responsible AI deployment.

4. Ethical Oversight and Compliance:

I will work closely with my academic supervisor and Trinity College Dublin’s ethical review board to ensure compliance with ethical standards. Ethical approval will be sought where necessary, and I will remain vigilant to any evolving ethical considerations throughout the research.

This plan underscores a commitment to ethical research practices, focusing on data privacy, sustainability, and societal impact to ensure the work contributes positively to both technology and society.

**Please provide a statement detailing whether there is a potential sex/gender dimension to be considered in carrying out your research. If your research involves any of the above, please indicate how potential sex/gender issues will be handled. If your research does not involve any of the above, please explain why there is no potential biological sex and/or social gender dimension to be considered in your proposed research. In particular, you are asked to reference the points mentioned in the 'checklist for sex/gender in research content' in the Call Document:**

The proposed research on optimizing the Network-on-Chip (NoC) architecture for AI accelerators is primarily technical, focusing on hardware design, energy efficiency, and system performance. As such, it does not directly involve human participants, biological sex, or social gender aspects. The core of this study revolves around the development and evaluation of algorithms and hardware configurations, which are inherently neutral to sex and gender considerations.

Given the nature of the research, the primary objective is to enhance the technical performance of AI systems, and this process does not involve any sex- or gender-specific elements. The methodologies employed, such as simulation, benchmarking, and energy-performance analysis, are applied uniformly to hardware and software systems without any interaction or impact on human subjects. Therefore, issues related to sex and gender are not applicable in this context.

However, in acknowledging the broader implications of technological advancements, the research will be conducted with an awareness of the importance of diversity and inclusivity in the field of AI. While this specific study does not engage with sex or gender issues, it supports the notion that advancements in technology should be accessible and beneficial to all, regardless of gender.

To ensure a holistic approach, the findings and results of the research will be communicated in a manner that promotes inclusivity. Any outreach activities, publications, and presentations will be made with consideration for diverse audiences, aiming to encourage participation and interest across different gender groups in the field of AI and computer hardware research.

In summary, there is no direct sex or gender dimension in the technical content of this research. The project focuses on hardware and performance optimization, which does not involve human participants. Nonetheless, the broader dissemination of the research outcomes will be handled with an inclusive approach.

**Please provide a data management plan which addresses the following:**

* **How will data be exploited and/or shared/made accessible for verification and reuse?**
* **How data will be curated and preserved?**
* **If applicable, how do you plan to make data FAIR (findable, accessible, interoperable and reusable)?**
* **If data cannot be made available, why?**

Data Management Plan:

1. Data Exploitation and Sharing:

The research will generate NoC simulation results, benchmarking data, and performance metrics. These datasets will be shared through publicly accessible repositories like Zenodo or Figshare, including detailed documentation for verification and reuse. The data will cover the experimental setup, parameters used, and NoC configurations. Proprietary data from industry partners, if any, will be managed according to confidentiality agreements, ensuring compliance and appropriate data sharing.

2. Data Curation and Preservation:

Data will be curated by organizing it with comprehensive metadata, describing the experimental setup, data formats, and parameters. Preservation will be ensured by storing data in secure, long-term digital repositories with persistent identifiers (DOIs). Regular backups will be maintained. Each dataset will include a README file with usage instructions, licensing terms, and contact details for further inquiries.

3. Making Data FAIR:

To ensure data is FAIR:

Findable: Data will have unique DOIs and be indexed in public repositories.

Accessible: Data will be available in open-access repositories, with clear access conditions.

Interoperable: Data will use standard formats (e.g., CSV, JSON) compatible with common tools.

Reusable: Detailed documentation and metadata will be provided, with clear licensing (e.g., Creative Commons) for reuse.

4. Data Availability and Restrictions:

Most data will be publicly available. If any data involve proprietary information (e.g., from AMD), restrictions will apply. In such cases, aggregated or anonymized data will be shared to protect intellectual property and comply with confidentiality. Documentation will outline any restrictions and access conditions.

This plan ensures research data is curated, preserved, and accessible for future use, fostering transparency and reuse in the research community.