

AMD Advanced Research at the College of Electrical and Computer Engineering, NYCU

Approved at the 1st College Administrative Council, 2nd Semester, AY2025 on March 3, 2026

I. Objective

To strengthen research collaboration between Advanced Micro Devices, Inc. (AMD) and the College of Electrical and Computer Engineering (ECE), National Yang Ming Chiao Tung University (NYCU), this initiative establishes AMD Advanced Research Program at NYCU ECE.

The AMD Advanced Research Program will accelerate innovation in hardware and software for AI technologies and systems, generate high-impact publications, patents, and prototypes, cultivate a sustainable pipeline of industry-ready talent, and strengthen long-term AMD–NYCU strategic collaboration.

II. Strategic Rationale

AI and high-performance computing systems are increasingly constrained by data movement, bandwidth density, and energy efficiency. Hardware–software–system co-design is therefore a key enabler for next-generation AI accelerators, chiplet-based architectures, and heterogeneous integration platforms.

Research focuses on AI technologies and systems, including materials, devices, circuits, algorithms, architecture, connections, software, and applications. Key research directions include, but are not limited to

- Power-Efficient AI Accelerators and Hardware Architectures
- Efficiency-Aware AI Models and Algorithms for LLMs and Edge Intelligence
- Edge–Cloud Collaborative AI with Joint Optimization of Network, Hardware, and Software
- Silicon Photonics and Optical I/O for AI and High-Performance Computing
- Heterogeneous Integration and Advanced Packaging for AI Systems
- Sensor–AI Co-Design for Emerging Applications (e.g. Healthcare, 6G Communications, Quantum Technologies, and Beyond)

Expected results:

1. Academic Excellence: Sustain high-impact publications in leading journals (e.g., Nature, Science) and maintain strong visibility at top-tier international conferences such as ISSCC, VLSI Symposium, IEDM, NeurIPS, ICLR, and CVPR, advancing globally influential research in AI hardware systems and silicon photonics.
2. Industry Impact: Strengthen AMD’s strategic technology leadership in AI accelerators, photonic interconnects, and silicon-photonics-enabled computing

systems, addressing next-generation performance, energy efficiency, and scalability challenges.

3. Talent Development: Cultivate interdisciplinary professionals with expertise spanning semiconductor technologies, IC and system design, AI architectures, and silicon photonics, aligned with future industry needs.
4. Global Visibility: Enhance collaboration with leading research institutions in the United States, Europe, and Japan, increasing international visibility and impact in AI and silicon photonics research.

III. Selection of Collaborated Research Grant

- a. A total AMD endowment of USD 96,000 supports the program.
- b. The College of ECE, NYCU, shall nominate several research by full-time faculty members holding a Ph.D. degree, who have demonstrated outstanding achievements in education and research, and who possess strong academic leadership and international recognition.
- c. The research shall be submitted to the AMD Advanced Research Program Review Committee formed by AMD and NYCU ECE College for review and final selection.
- d. Each grant shall be for a term of one year, and may be renewed subject to mutual agreement by AMD and NYCU.

IV. Responsibilities of the Research Grantee

During the grant period, each selected faculty research grantee is expected to:

- a. Conduct leading-edge research aligned with advanced semiconductor, computing, AI, or related technologies
- b. As appropriate, use AMD platforms, including but not limited to Ryzen or EPYC CPUs, Instinct or Radeon GPUs, Ryzen APU's or Ryzen AI PC, AMD FPGAs and Adaptive SoC and RFSoc, for relevant teaching and research, and to provide feedback to AMD.
- c. Publish research outcomes under the AMD-NYCU Pervasive AI Computing and Communications Lab.
- d. Publish, when suitable, in academic exchanges, technical forums, industry-academia collaborations, or activities that enhance the visibility and impact of AMD-NYCU collaboration.

V. Funding Usage

AMD funding will support research seed projects, graduate student and postdoctoral researcher support, joint AMD-NYCU workshops and technical

exchanges, conference participation, and prototyping and measurement infrastructure.

Item	Amount (USD)	Description
Research Programs & Collaborated Research (2)	80,000	Support for two joint research projects (USD 20,000 each) and faculty honoraria (USD 20,000 each).
AMD-NYCUECE Research Workshops/ ECE College Research Activities	6,400	Support for international scholar lectures and on-site research collaboration, organization of research outcome workshops, and administrative and personnel support for international collaboration management.
University Overhead / Management Fee (10% of total amount)	9,600	University administrative and facility management costs
Total	96,000	