Research Establishment for Game Advancement and Industry Networking (REGAIN)

Project Team:
Principal Investigator: Akira Kawaguchi, Professor and Department Chair
Department: Computer Science, Grove School, The City College of New York
Other Key Personnel: Christian Wolf (Mathematics Chair), Punit Arora (Economics and Business Chair), Mark Addison Smith (Electric Design & Multimedia Director)

Project Concept Description
Keywords: Game program, Game research, Game collaboration

Objective: This project, named "*Research Establishment for Game Advancement and Industry Networking* (REGAIN)," will develop forefront and vibrant game research through interdisciplinary collaborations among four divisions of the College, stimulate the expansion of the City's Ecotec systems by securing new degree offers with research concentrations, and cultivate business opportunities by enhancing a university-industry partnership. The term "game" here is the concept beyond entertainment.

As a background of this proposal, Stanley Altman, who affiliates with the Office of the President and the Urban Arts Partnership, is negotiating with Mayor's Office to develop bachelor's degree programs in game design and potentially certificate programs that could run at the Continuing and Professional Studies. A group of CCNY representatives agreed to work out for the curricular development and degree offers, starting Fall 2022. The expected funds from the City would involve the expense for an effort to recruit students into the program by outreach to local high schools working in collaboration with the Urban Arts Partnership, School of Interactive Arts, and other local not-for-profits as well as existing programs at the college like the STEM Institute.

Game development incorporates elements of background theory, design, artistry, production, and engineering. The program development provides us with an unprecedented level of cross-disciplinary collaborations in the College and professionals from the industry. It also makes us delve into every aspect of the advanced concept of games and brand-new frontier technologies such as Augmented Realities and Gamified Decentralized Finances. While the degree offer is imperative for CCNY to be in the frontline of this area, the funds to request Mayor's Office do not compensate much for the research aspect of this technological advancement. The REGAIN project will focus on the cross-disciplinary collaborative work to develop and gain the leading position in this enormous technology field of game and the simulated world, which will give us a significant advantage in the CCNY's endeavor to a widely recognized advancement.

The REGAIN's research will aim as an interdisciplinary endeavor to bridge Arts with STEM, including points on how gaming enhances education, bench sciences, and engineering, invites experiential learning not gained from traditional classroom settings, enhances cognitive and visual skills. Spanning to physics, materials, chemistry, bio-, energy, and life sciences, the project will aim to help solve real-world problems and advance the nation's interests, including the most pressing challenges of our time, such as territorial fights and governance conflicts, by introducing beyond the imaginary level of creativeness and parallel thinking from different paradigms. CCNY will gain investment returns by commercializing the products of this project effort.

Approach: The REGAIN project will exercise a holistic approach based on the group work to tie up the divisions represented by Arts and Media, Economics and Business, Mathematics, and Computer Science, and incentivize in-house talents to grow into specialized domains instead of recruiting ones from outside. The key personnel and PI will seek interested representatives and volunteers from Colin Powell, Science, Humanities and Arts, and Grove School to form a technical task force for each, consisting of three to four

members from the division it belongs. The key personnel and PI will lead the task force and share the responsibility of the progress. The four task groups meet periodically and go through the technology learning and classification phase in the first year of the project, the industry collaboration and integration phase in the second year, and the production and dissemination phase in the third year. The task groups will produce deliverables together.

Outcomes: This project will serve as a valuable catalyst for promoting transformation from the vertical division of our educational roles. The project envisions an opening of our collective talent to the wide world of work through a fully duplex arrangement with industries including Google and Meta where faculty and students will have access to the best and brightest in the corporate and academic world. The project participants gain and master the latest concepts, tools, theories, techniques and business models current in industry and academia.

Expected Products: Two to three products, extensible to device and hardware management, will be codeveloped with industry partners, which may commercialize with CCNY/CUNY license.

Merits: The merit of the current proposal lies in its bid to institutionalize and unify the talents in distinct divisions and university-industry cooperation in a way that expands a structural and staffing problem to develop this new area of game-oriented research. The key is the incentive scheme designed to induce four divisions to encourage their personnel to delve into multidisciplinary game development. At present, it is relatively rare that academia moves in this course of direction. The proposed research would pioneer the development of regular channels of communication between CCNY and local companies and implement a scheme from which both parties would benefit.

Impact: The project will develop a model of a public university to ahead both cross-disciplinary collaboration and industry cooperation that could be adopted by universities throughout the country to help meet the challenge of maintaining American preeminence in technologies. The existing separation between the talents is unnatural, especially for the subject of game development. The proposal is to eliminate this artificial separation to enable CCNY to fulfill its potential, and at the same time, underwrite continued innovation in the industry.

Milestones
Year 1: 6 months to form task force groups, conduct literature studies, and support BA/BS/BFA curricular development. Deliverables: survey of games today (disseminated) and final degree curriculums • 6 months to map out the needs of game applications to CCNY's available research: Deliverables: coarse designs of game applications applied to ongoing research work. Study of gamers and relevant business models.
Year 2: 6 months to develop industry connections, form an advisory board, and co-produce a game design and development guidelines and methodologies. Deliverables: game handbook (disseminated). • 6 months to explore the implantability of the game applications identified above. Deliverables: refined game design and industry input on product commercial values
Year 3: 6 months to select 2 to 3 representative and demonstrative applications and perform their detail designs. Deliverables: application specifications (disseminated) and alpha units • 6 months to develop, integrate, and test the applications. Deliverables: final products and industry feedback on the products.

Budget
Request the annual total amount of $200K and share among the four divisions, each allocated $50K to conduct the project work. The listed three key personnel and PI will determine the use of funds, mostly incentivizing task force members and recruited research assistants by salaries and/or released hour compensations, plus reserving a small portion of OTPS costs for domestic travels and supplies.