UC Bearcat AI Grants Proposal

ID Career Sorter App: Personalizing Industrial Design Education
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1 Project Summary

The ID Career Sorter App is a transformative AI-powered web platform that personalizes industrial design (ID) education at the University of Cincinnati (UC) by mapping students' unique interests (e.g., building LEGO, drawing spaceships) to tailored career paths (e.g., toy design, concept art) using a Neo4j graph database and natural language processing (NLP). By delivering individualized curricula, resources, and industry connections, it redefines pedagogy and enhances student life, fostering enthusiasm for ID and clarifying career ambitions. AI in teaching leverages algorithms to adapt education to each student, making learning relevant and engaging. Aligned with UC's "Next Lives Here" strategic direction, the app promotes academic excellence, urban impact, and innovation. A pilot with 50 DAAP students will measure increased interest in ID and the app's relevance to career goals, setting a scalable model for personalized education.

2 Project Description

2.1 Background and Significance

Industrial design's breadth—from product design to interactive media—overwhelms students seeking a career focus. Traditional advising often lacks the granularity to connect personal passions to specific roles. The ID Career Sorter App innovates by using AI to deliver precise, interest-driven guidance. Its Neo4j database (idcareersorter) stores 35 interests, 28 skills, and 25 roles, linked by relationships. NLP (sentence-transformers) matches inputs like "I loved playing with action figures" to careers like toy designer, accommodating diverse inputs with high accuracy. This approach, inspired by personality sorters but tailored to ID, empowers students to navigate their educational journey with confidence.

AI in Teaching: A Primer for the Committee
AI in teaching uses computational models to analyze student data (e.g., interests) and generate customized learning experiences. For ID students, the app processes inputs to recommend courses (e.g., 3D modeling for toy design) and projects (e.g., prototyping an action figure), ensuring relevance. Unlike static curricula, AI adapts dynamically, boosting motivation by aligning education with personal passions. For committee members new to this field, consider AI as a mentor who knows each student's unique profile, scaling personalized guidance across UC's diverse student body. This fosters creativity and engagement, critical for ID's hands-on, innovative nature.

2.2 Objectives

- Develop an innovative AI-driven app to match students' interests to ID subfields.

- Curate personalized curricula and resources to enhance enthusiasm for ID.

- Facilitate industry connections to define career ambitions.

- Evaluate the app's impact on students' interest in ID and its relevance to career goals.

2.3 Methodology

The project will unfold in three feasible phases over one year:

1. Development (June–August 2025): Build the app using Python, Streamlit for a user-friendly web interface, and Neo4j. Create an interest assessment (e.g., a quiz: "What did you love as a kid?"), a resource database (e.g., Coursera tutorials), and a networking portal. Use ethical AI practices: transparent algorithms, bias mitigation, and secure data handling. Leverage existing expertise from DAAP's AI initiatives.

2. Pilot Implementation (September–December 2025): Deploy to 50 DAAP ID students, supported by faculty collaboration. Collect feedback via surveys (e.g., "How has the app shaped your interest in ID?") and focus groups to refine functionality.

3. Evaluation and Scaling (January–April 2026): Assess outcomes through surveys and interviews, focusing on interest in ID and career clarity. Present at the UC AI & Emerging Tech Symposium (February 2026) and submit reports, exploring scalability across UC programs.

2.4 Ethical AI Considerations

The app prioritizes ethical AI:

- Transparency: Explains recommendations (e.g., "Your LEGO interest suggests toy design due to prototyping skills").

- Fairness: Uses bias-mitigation techniques (e.g., gender-neutral suggestions) validated by DAAP's diversity committee.

- Privacy: Employs anonymized, FERPA/GDPR-compliant data storage with encryption.

- Societal Impact: Promotes inclusive education, reducing barriers for underrepresented students.

- Accountability: Incorporates feedback loops for students to report issues, refining algorithms.

3   Pedagogy Focus

The ID Career Sorter App revolutionizes pedagogy by using AI to craft individualized learning paths, aligning with UC's academic excellence goal. For a student passionate about video games, the app recommends interaction design courses and projects like "Design a game controller prototype," enhancing engagement. Faculty access progress data (e.g., project milestones) to provide targeted feedback, improving outcomes. Resources (e.g., Udemy tutorials) align skills with career aspirations, fostering enthusiasm for ID.

Benefits of Personalized Education
AI-driven personalization makes education relevant, increasing motivation and creativity. Unlike generic curricula, the app ensures coursework reflects each student's passions, vital for ID's diverse, hands-on subfields. For committee members, this mirrors a mentor tailoring guidance for each student, scaled efficiently by AI. Interdisciplinary collaboration with UC's Applied AI Lab ensures robust pedagogical integration.

4   Student Life Focus

The app enhances student life, supporting UC's urban impact mission:

- Interest in ID: Gamified quizzes spark excitement for ID subfields.

- Career Clarity: Clear paths (e.g., "Your clay crafting suits product design") reduce uncertainty.

- Career Education: Connects students to professionals (e.g., Mattel designers) via curated contacts.

- Alumni Engagement: Links students with UC ID alumni, building community.

A mobile-friendly interface ensures accessibility, fostering engagement and social connections.

5   Expected Outcomes

- Quantitative: 90% of students report increased interest in ID (surveys); 85% find the app relevant to career ambitions (e.g., choosing concept art); 80% satisfaction rate.

- Qualitative: Heightened enthusiasm for ID; clearer career goals; stronger faculty-student and UC-industry ties.

Scalability potential includes adapting the app for other DAAP disciplines, amplifying impact.

6   Timeline

- June–August 2025: Develop app and database.

- September–December 2025: Pilot with 50 students; submit mid-year report (November 14, 2025).

- January–February 2026: Evaluate pilot; present at UC AI & Emerging Tech Symposium (February 2026, TBD).

- March–April 2026: Finalize evaluation; submit end-of-year report (April 17, 2026).

7   Budget

Total request: $5,000

- Personnel ($3,000): AI developer (10 hours/week, 3 months) and student assistant for survey design.

- Technology ($1,000): AWS cloud hosting and open-source tools (Neo4j, Streamlit).

- Resources ($500): Free tutorials and symposium materials.

- Evaluation ($500): SurveyMonkey subscription and focus group incentives.

The budget is justified for efficient resource use, leveraging existing UC infrastructure.

8   Qualifications

John Violette (PI): Adjunct Professor at UC DAAP with 26 years of ID experience in footwear, toys, entertainment, and product design. Expert in AI implementation, with a track record of mentoring students for career success and collaborating on UC's AI initiatives.

9   Alignment with UC's Strategic Direction

The app aligns with UC's "Next Lives Here" vision:

- Academic Excellence: Personalizes education, enhancing learning outcomes.

- Urban Impact: Connects students to Cincinnati's design industry (e.g., Procter & Gamble), fostering local partnerships.

- Innovation Agenda: Pioneers AI-driven education, positioning UC as a leader in ID pedagogy.

Interdisciplinary collaboration with UC's Applied AI Lab strengthens alignment.

10   Conclusion

The ID Career Sorter App leverages ethical AI to personalize ID education, igniting student enthusiasm and clarifying career ambitions. Aligned with UC's strategic goals, it offers an innovative, feasible, and impactful solution for DAAP. We respectfully request $5,000 to realize this vision, setting a model for AI-driven education at UC.