# Inclusive Impact Innovation (I3) Fund Proposal

## Spring 2024

Project Title: AI Empowerment: Bridging Educational Gaps for Underrepresented Groups

Team Member Names


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## Section I: Project Description

The AI Empowerment project is designed to develop a set of AI tools aimed at assisting underrepresented groups in applying to higher education institutions. These tools are aligned with the Provost's Office AI for Education Project (AI4ED) at Northeastern University. Details of how these tools can be built are found on the AI4ED GitHUb .https://github.com/nikbearbrown/AI4ED. By leveraging AI technologies, this initiative aims to provide personalized guidance and resources, making the application process to college, graduate school, or PhD programs more accessible and navigable.

AI based tools, designed to assist underrepresented groups in applying to college, graduate school, or PhD programs, can play a pivotal role in democratizing access to higher education and supporting applicants through personalized guidance and resources. Here's how such a chatbot might be instrumental in this process:

## 1. Personalized Application Guidance:

- Understanding Requirements: It can provide tailored information on application requirements for different programs, including essays, recommendation letters, and standardized test scores, ensuring applicants understand what's expected.
- Deadline Reminders: By offering personalized reminders for application deadlines and important dates, the chatbot helps applicants stay on track with their applications, reducing the chances of missing critical deadlines.

## 2. Financial Aid and Scholarship Information:

- Scholarship Opportunities: The chatbot can offer information on scholarships, grants, and financial aid options available specifically for underrepresented groups, helping to alleviate financial barriers to higher education.
- Application Assistance: It can guide users through the process of applying for financial aid, breaking down complex forms like the FAFSA into simpler, manageable steps.

## 3. Preparation for Standardized Tests:

- Study Resources: The chatbot can recommend study materials, online courses, and practice tests for exams like the SAT, ACT, GRE, or GMAT, tailored to the user's strengths and weaknesses.
- Study Plans: It might also create personalized study plans, helping applicants efficiently allocate their study time to improve their scores.

## 4. Mentorship and Support:

One of the most significant barriers concerning underrepresented groups' access to college, graduate school, and Ph.D. programs in the United States: include a lack of mentorship, financial challenges, and a feeling of isolation within academe. Underrepresented groups in U.S. higher education face critical barriers, including a lack of mentorship, and feelings of isolation. Research suggested that mentorship is essential, especially for Black students, to overcome social, occupational barriers, and isolation. Mexican American women encounter unique challenges like sex-role restrictions and low socioeconomic status, contributing to their alienation.

- AI-Powered Mentorship Platforms: Develop platforms where AI matches students with mentors based on interests, goals, and background, facilitating personalized guidance.
- Virtual Support Groups: Use AI to create safe, moderated spaces for underrepresented students to share experiences, resources, and advice, fostering a sense of community.
- Inclusive Content Creation: Implement AI tools that help educators develop course materials that reflect diverse perspectives and experiences, promoting inclusivity in curriculum design.

- Bias Detection Systems: Utilize AI to review application materials and institutional policies to identify and mitigate bias, ensuring fair treatment of all students.
- Language Translation Services: Offer AI-driven translation for educational materials and support services, making them accessible to non-native speakers and promoting linguistic diversity.
- Emotional Support Chatbots: Design chatbots that provide emotional support and mental health resources, offering a confidential space for students to seek help.

## 5. Career and Academic Advising:

- Program Selection: It can assist applicants in selecting programs that align with their career goals and academic interests, providing insights into various fields of study and potential career paths.
- Research Opportunities: For those applying to graduate school or PhD programs, the chatbot can provide information on research opportunities, lab positions, and how to connect with potential advisors.

## 6. Cultural and Community Resources:

- Campus Life: Information on campus resources for underrepresented groups, including cultural centers, student organizations, and support services, can help applicants understand the community and support system available.
- Preparation for Transition: Tips on preparing for the transition to college or graduate school, such as what to expect in the first year, how to navigate academic challenges, and ways to get involved on campus.

## 7. Feedback on Application Materials:

- Essay Review: While not replacing human feedback, the chatbot could offer basic suggestions on improving personal statements and essays, such as checking for clarity, coherence, and common grammatical errors.
- CV/Resume Tips: Advice on formatting and content to include in academic CVs or resumes, tailored to the norms of different fields.

By providing a comprehensive, accessible, and personalized support system, an expert chatbot can significantly impact the ability of underrepresented groups to navigate the complex landscape of higher education applications. It not only helps in practical

aspects like understanding requirements and deadlines but also offers emotional support and mentorship, addressing both the logistical and psychological barriers these applicants face.

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## Section II: How Project Will Achieve Inclusive Impact

This proposal aims to significantly enhance inclusion and the sense of belonging within the Northeastern global university system by:

- Providing individualized guidance on application processes and requirements.
- Offering detailed financial aid and scholarship information to mitigate financial barriers.
- Connecting applicants with mentors for personalized support and advice.
- Supplying career and academic advising tailored to the unique needs and aspirations of underrepresented students.

*Nicholas Brown: Technical Expertise and Impact on Inclusive Education*

As an Associate Professor in Engineering at Northeastern University, I bring a wealth of experience in computer science, applied mathematics, and various technical disciplines to lead projects focused on inclusive education. Holding a Ph.D. in computer science with a focus on computational systems biology, AI, and statistics from UCLA, I leverage this background to innovate in educational technology. My teaching across several prestigious institutions has sharpened my focus on inclusivity and personalized learning.

My interdisciplinary research and teaching, enriched by a Masters in Information Design and Data Visualization and an ongoing MS in Finance/MBA at Northeastern University, span critical areas like AI, ML, DL, and computational biology. These efforts are aimed at pushing the boundaries of education through technology.

Leading the AI for Education Project (AI4ED) at Northeastern, I've been instrumental in weaving AI into educational frameworks to create adaptive and personalized learning experiences. This work, alongside collaborations with institutions like the Broad

Institute and Harvard Medical School, underscores my commitment to a multidisciplinary educational approach that serves diverse student needs.

Additionally, my advisory role with startups in the tech field reflects my dedication to applying academic insights to real-world challenges, fostering innovation in education and beyond. This blend of academic prowess and practical engagement positions me uniquely to contribute to projects that aim for a significant, inclusive impact on education.

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## Section III: Budget Proposed

| Budget Item | Cost | Justification |
|---|---|---|
| Graduate Developer Salaries | $100,000.00 | To recruit and compensate graduate developers for advanced AI chatbot development and algorithm refinement. |
| Student Engineer Salaries | $50,000.00 | To employ student engineers for chatbot programming, testing, and initial deployment. |
| Total Funding Requested | $150,000.00 | |

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## Section IV: Timeframe and Metrics

Timeline: May 2024 - April 2025

- Development & Design: May 2024 - August 2024
- Pilot Testing & Iteration: September 2024 - November 2024
- Official Launch & Ongoing Evaluation: December 2024 - April 2025

Metrics for Success:

- Quantitative measures of user engagement and application submission rates from targeted groups.

- Qualitative feedback on the chatbot's effectiveness in easing the application process.
- Increased awareness and utilization of financial aid resources among underrepresented applicants.

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## Section V: Results

The project will culminate in the launch of a fully operational set of AI tools , detailed analytical reports on its efficacy and user engagement, and a set of best practices for future DEIAB tech initiatives.

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## Section VI: Post-Grant Sustainability

Beyond the grant period, the project will seek additional funding and institutional support to ensure the chatbot's continuous improvement and integration into Northeastern's DEIAB efforts. The long-term goal is to establish the chatbot as a cornerstone resource for enhancing accessibility and equity in higher education applications.

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This proposal embodies the I3 Fund's commitment to fostering innovative DEIAB initiatives at Northeastern University. Through the AI Empowerment project, we aim to set a precedent for using technology to overcome barriers to higher education for underrepresented groups, thereby advancing the university's vision of becoming a more inclusive and welcoming institution