Wayne State research team receives funding to accelerate use-inspired solutions for persons with disabilities

DETROIT – A team of researchers led by Wayne State University (WSU) has received a $613,000 grant from the U.S. National Science Foundation (NSF) to address the transportation-related employment needs of individuals with disabilities living in Metro Detroit. The project, named MicroBoost, aims to create and implement human-centered Artificial Intelligence (AI) technology to enhance availability and access to public microtransit options for individuals with disabilities. The goal is to increase transportation freedom for persons with disabilities, thereby enhancing community inclusion and the ability to connect with meaningful employment.

The project is a collaborative effort of WSU's College of Engineering, the Michigan Developmental Disabilities Institute (MI-DDI) at Wayne State, North Oakland Transportation Authority (NOTA), the University of Delaware, and Michigan Rehabilitation Services (MRS). The team is led by Dr. Marco Brocanelli, Assistant Professor in the Department of Computer Science at Wayne State's College of Engineering.

The MicroBoost project is part of the NSF Convergence Accelerator program's 2022 Cohort. Launched in 2019, the NSF's Convergence Accelerator builds upon research and discovery to accelerate use-inspired convergence research into practical applications. The program, aligned to the Directorate for Technology, Innovation and Partnerships, funds a cohort of teams to work interactively toward solving grand societal challenges that impact thousands of people positively. The Wayne State-led team was selected as 1 of 16 multidisciplinary Phase 1 teams for the 2022 Cohort's Track H: Enhancing Opportunities for Persons with Disabilities.

"We are excited to be part of the Convergence Accelerator program's 2022 cohort" said Dr. Brocanelli. "Our team is looking forward to harnessing the tools and expertise

offered by NSF to expand and improve transportation options for individuals with disabilities."

"I am excited to lead the development and deployment of assessable trustworthy artificial intelligence (AI) sociotechnology. This technology will aid microtransit services in determining when and where to pick up/drop off people with disabilities. The goal is to ameliorate the spatiotemporal mismatch between where people live and where they work" said Dr. Dongxiao Zhu. Dr. Zhu is the founding director of Wayne AI Research Initiative and a co-PI on the NSF-funded project. "It is another AI4Good project coming out of this initiative!"

The Convergence Accelerator is a unique NSF program. While the program is focused on advancing research toward societal impact, it is also intentionally developed around four key components to provide the greatest benefit. These include a convergence research approach, strong multi-organization partnerships, high-impact deliverables, and track alignment. Teams will engage weekly with NSF coaches and experts from various fields with a shared goal of focusing on how projects can have the most impact.

Convergence Accelerator research topics begin as an ideation process—gathering input from the community. Identified topics must meet a societal need at scale, be built upon foundational research and be suitable for a multidisciplinary, convergence research approach. Each Convergence Accelerator research topic involves a two-phase approach. This ensures the selected teams and funded use-inspired convergence research are proactively and intentionally managed.

The nine-month phase 1 competition runs from January 1 through the end of September 2023. Teams will work to develop their initial concept, identify new team members, participate in the innovation curriculum, and develop an initial prototype. The innovation curriculum consists of training in human-centered design, team science activities, inter-team communications, pitch preparation, and coaching - all of which are essential components of the Convergence Accelerator's model. This training helps the teams to

better prepare for success in the next phase.

At the end of phase 1, each team participates in a formal pitch and proposal evaluation. Selected teams from phase 1 will proceed to phase 2, with potential funding up to $5 million for 24 months. To that end, the MicroBoost team will be seeking input from community members with disabilities, transportation professionals, employment specialists, and other stakeholders. “Gaining insight from end users and other professionals will be key to developing a prototype that meets the transportation needs of individuals with disabilities and those who support them” states Brocanelli. “We hope to have a significant impact on the ability of public microtransit to meet the evolving needs of riders with disabilities.”

To learn more about the MicroBoost project, contact the project’s PI, Dr. Marco Brocanelli, at brok@wayne.edu. Visit the NSF website to learn more about the Convergence Accelerator program.