Resultados MIT

Title	Applicants	Area	Description
Assistive Technologies for Healthcare - Phase II	John Guttag , Dorothy Curtis (MIT) and Esteban Pino, Pablo Aquevece (U. Concepcion)	Electrical Engineering	People with reduced mobility have care needs that can benefit from an automated medical support system. In our previous project (phase I), we developed contact-less hardware to detect individual issues for Multiple Sclerosis patients. The main concerns were to ensure pressure relieving tilts to prevent contact ulcers and return indoors to avoid heat strokes in the summer months. The hardware was tested at The Boston Home (TBH), an assisted living facility, with good results. Our monitoring system can also evaluate the activity level of an electric wheelchair user and collect respiration and cardiac information during that time. This physiological information can be reported to family and/or caregivers, if the user so desires, in order to ensure good care. The pilot test at TBH was successful and encouraged us to continue developing this project. In phase II, we want to leverage the technologies tested in phase 1, and expand the system to address relevant issues for both inpatients and outpatients at TBH or at home. Using the same contact-less sensors, we want to provide a fully automated, self care system. This consists of 2 parts: a personalized daily living assistance gear for best-practices reminders (tilting and heat stroke avoidance) and a physiological monitoring to detect apneas and cardiac events both in the wheelchair and on the bed.
Developing Affordable Strategies for Crowdsourced Sensing for Disease and Environmental Monitoring	Lee Gehrke, Jose Manuel Robles (MIT) and Camilo Rodriguez Beltran (U. del Desarrollo)	Health Sciences and Technology	This project aims to develop novel approaches to create sensing devices for environments (urban and rural) that are left behind the current trends: most vulnerable areas in both developed and developing countries. Our collaboration aims to: 1) Measure the Smart/Digital City disparities between high income cities and low income/rural cities — understand the gap in access to crowdsourced approaches for health and environmental information; 2) Host an onsite workshop to analyze and propose technologies that can bridge the gap in these disparities; 3) Field test 3 common technologies on-site in Chile using a combination of our existing and future sensor technologies in disease and environmental monitoring. In close collaboration with rural and coastal communities in Chile, our focus will be made in health and environmental problems. Two areas will be particularly approached for sensing: low-cost modular electronics, printed (2D and 3D) smart materials and paper diagnostics. Prototype testing will value in context-appropriateness and high technical and economical replicability. This project aims to provide technological development of high global social impact, transforming unconventional environments into smart sensorial environments.
Effects of Analgesia in Electroencephalographic Indicators of Pain Perception	Emery Brown (MIT) and Jose Egana (U. Chile)	Brain & Cognitive Sciences	Pain feels as an uncomfortable sensory experience, and leads as the main cause of visits to the physician. Pain is a subjective experience, and occurs through a physiological process known as nociception. Blockade of the nociceptive pathways is key to prevent and relief pain, providing analgesia. During surgical procedures, the acute pain caused by the surgery can potentiate normal nociceptive transmission, and if is not well managed, can result in the establishment of chronic pain. Analgesia management during surgery is complicated, because the subjects are anesthetized, and cannot give a verbal report on their state. It is, therefore, very important to monitor the level of analgesia using physiological signals. Electroencephalographic recordings suggest that increase in power in certain frequency bands correlates with perceived pain sensation, when the pain is evoked by a thermal stimulus applied to the skin. However, it is not known whether this finding generalizes to painful stimuli, or if they are related to the relief of pain provided by analgesic drugs. The experiments conducted in Chile aim to study the effect of analgesia on the electroencephalographic markers of pain. The collaboration project proposes to combine the current research of the Chilean group with the clinical and analytical strengths of the MIT group. Our joint efforts aim to decode pain perception by combining physiological recordings and subjective reports. Such findings could be used in the operating room to obtain an unbiased measure of pain management, and prevent the establishment of chronic pain syndromes.
Measuring Em-Préndete: Developing Alternative Metrics for Economic and Social Outcomes in Southern Chile	J. Phillip Thompson (MIT) and Ester Fecci and Guy Boisier (U. Austral de Chile)	Planificacion Urbana	Given its ambitious goal of not only expanding economic opportunities for marginalized communities but also strengthening community resilience overall, UACh needs a comprehensive assessment tool to measure the EmPréndete program's multiple impacts and a strategy for incorporating findings into program operations. UACh is also looking for more effective ways to recruit new students and maintain involvement from alumni once they complete the curriculum. The MIT Community Innovators Lab (CoLab) and UACh are seeking MISTI seed funds to develop a new component of the Em-Préndete program: a set of tools to assess and expand the program's direct and indirect impacts among students, organized indigenous communities, and women's associations, both within UACh and across the Los Ríos region. Using student-to-student collaboration to develop these tools, CoLab and UACh aim to create a network of future professionals who have the skills, knowledge, and relationships to enact policies and programs to build a more productive and resilient economy in southern Chile.