

IDEA Labs Team Portfolio – March 2015

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Ongoing projects from previous cohorts

Software

DataDog Health Informatics



We are developing а system for enhancing therapy for stress and anxiety disorders through wearable technology. The DataDog companion app closes the care gap between sessions with the therapist. Patients engage with their

Value Proposition to Patient







Continuous Realtime Monitoring Notifications

Meaningful Intervention

Pattern Tracking

therapy regimen in their daily lives by interacting with our therapy tools. Our system mitigates stress events by monitoring autonomic signals and prompting the patient to pursue coping techniques when they are experiencing stress. We ultimately aim to expand usage of mobile and wearable technology for mental health applications. The DataDog team plans on seeking professional advice for IP and business strategy as well as running a pilot study with an alpha version of the mobile app.

Devices



The Mint Group

The Mint Group is taking a fresh approach to nasal endoscopy and is well poised to change the existing paradigm of ENT care. ENT physicians and administrators are frustrated with a lack of ergonomics in current designs and excessive initial and maintenance costs. Our solution is a medical imaging system comprised of an endoscope with disposable optics and wireless attachments that conforms to commodity standards. Our system will reduce the number of endoscopes and personnel a clinic must employ, reducing initial costs by 90% and operating costs by 25%. Our endoscope system will drastically improve ENT patient care at a significantly reduced administrative cost.

EnteroGauge

The EnteroGauge is a digital "tape measure" that attaches to standard enteroscopes and can reliably display how far an Enterogeauge enteroscope was advanced into the small intestine, which can be 20 feet long. The EnteroGauge will improve patient outcomes by



providing gastroenterologists with the exact location of a lesion in the small intestine; this will allow the gastroenterologist to monitor it over time and help surgeons reliably locate it for removal. We have filed a provisional patent and are in the process of conducting animal trials to gauge the effectiveness of our prototype.



Epi Squared

Wireless Implantable Devices



Epi squared is tackling the problem of providing power to implantable devices (e.g. Pacemakers, to LVADs) non-invasively. We are currently targeting our project towards recharging of implanted nerve stimulation devices used in epilepsy. We have a working prototype and a provisional patent. We were finalists in the Olin Cup business development competition. We recently presented our device at the Kairos Society Global Summit in Seattle.

IdealTap

The IdealTap Lumbar Puncture Chair is a manipulable chair that takes advantage of the two main positions that patients assume during a lumbar puncture procedure, and moves the patient smoothly between the two. Our device makes the spinal tap procedure faster and easier for the physician, as well as safer and more comfortable for the patient. We have completed a proof-of-concept prototype and are now



in the process of manufacturing a prototype that is safe to be used in the clinic. We will use this clinical prototype in the hospital to market the many benefits of using the IdealTap Chair.

kinoCOM

(Kinetic communication for paraplegic patients)

Devices that enable paraplegics to use a computer are typically static and rely on a single muscle system (e.g. eye tracking systems). Paraplegics' mobility and preferences can vary widely, even within a single patient (in the case of neurodegenerative disease). The kinoCOM is an adaptable learning device that can be attached to the users body and trained ton control a cursor. The prototype has two 'control rings' that can be manipulated by the user. Each control ring contains an inertial measurement units



(IMUs, or combined accelerometer-gyroscopes) that capture 6 degrees of freedom. We created this HCI (human computer interface) device for a stroke patient who is almost completely paralyzed and unable to speak. Kinocom won 1st Place at IDEA Labs Demo Day and Second place in the National MicroMedic contest. Kinocom won a \$2000 electronics kit to further improve the device from the MicroMedic Contest.



Current Teams

Software

Epharmix

Epharmix has developed customized prescribable electronic interventions for a wide range of conditions (from dialysis compliance to sickle cell treatment) and tests them at the same level of clinical validity as traditional pharmaceuticals. At the moment Epharmix has clinical trials testing over fifteen novel e-pharmaceuticals, with current preliminary data suggesting improvement in time to treatment and clinical outcomes. In addition, Epharmix interventions are designed to be reimbursable by medicare, produce cost savings from reduced negative outcomes such as hospital readmissions, and help healthcare organizations reach meaningful use requirements.

Healthcare Unlocked

Sharing electronic medical records (EMRs) between physicians is very difficult. This can lead to duplicated tests, increased costs, and (in a worst case scenario) harmful drug interactions. DRET is able to cut this time down dramatically by storing a patient's medical records in a centralized cloud-based system. We can then issue digital ID cards to



patients and doctors, allowing them to access those records. A patient can be given an ID card by his or her primary care physician, allowing for basic information on the patient (e.g. name, date of birth, advance directives, etc.) and his or her medical records to be stored in an encrypted form on our servers.

Eureka

Proper positioning of an initial patent can create long-term savings, both in legal fees and time. Eureka aims to aid universities, corporations, and start-ups in elucidating the path to searching for/filing a patent as well as staying ahead with technologies. Eureka has developed a new graphical and intuitive representation of previous and existing patent literature such that, users can simply enter the desired search terms into Eureka's search bar and all related and existing patents will be displayed such that one can navigate the patent landscape easier than ever before. Through a better representation of the existing landscape, users can not only see what exists but also the gaps in technology through patent language, providing a quicker path to refining a given product or process.

Interactive Medical Questionnaire System - IMQuest

As hospitals transition to electronic health record (EHR) systems, patients are still spending time in waiting rooms filling out paper questionnaires that require manual entry. We are developing an interactive medical questionnaire system, IMQuest, to optimize patient-doctor communication. IMQuest uses a patient-friendly user interface that minimizes typing, defines medical terms, and provides opportunities



to mark questions for the doctor. The input is transferred to secure storage and instantly translated to a customizable summary for the physician. IMQuest is HIPAA compliant and programmed using "future-safe" infrastructure that integrates the questionnaire data with the patient's EHR. IMQuest improves the quality and efficiency of notoriously short visits to the doctor's office.



Diversity Demystified

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Diversity Demystified has reinvented perceptions of diversity and diversity **Diversity Demystified** training by creating a diversity immersion tool to meet the current deficit in interpersonal communication and community citizenship. We define diversity as the engagement of individuals who embody an array of identity markers. We believe that effective interpersonal communication necessitates an exploration of preconceived notions of various identity markers in all aspects of daily life. In professional settings, this exploration is not routine and takes place in the form of diversity training limited to particular spaces and times, stifling immersion and true transformation for staff. Through Diversity Demystified, users have access to virtual immersions, which provide an exploration of various identity markers and statuses through a mobile application or via a website. Diversity Demystified enables participants to digest complex concepts at their own convenience. The mission of Diversity Demystified is to illuminate perspectives to enable transformations creating environments where all are accepted, understood, and included.

Devices



Gene-oscopy

Gene-oscopy is developing a next generation colorectal cancer screening method that evaluates the mRNA in stool samples, getting rid of the need for colonoscopy in healthy patients. Patients provide a fecal sample to the doctor, the mRNA in the stool is extracted, and the expression profile of this sample determines if the patient requires further care. Gene-oscopy aims to reduce the cost of screening and improve patient compliance to reduce the number of preventable colorectal deaths in this country.

Volt Optics: An intelligent pair of multifocals

Modern glasses are clumsy. Single-prescription lenses are inadequate, and bifocals or varifocals have obscured, small fields of view. Many people carry only reading glasses around with them for shortsighted reading during a small percentage of the day. We are creating variable-prescription glasses that can quickly change prescriptions with just the touch of a button.

Squarefruit

Squarefruit Labs aims to accelerate the next manufacturing race with Persona. Persona is a unique robot equipped with a 7 degree-of-freedom arm and several multilevel camera systems for real world interactions that involve advanced manufacturing techniques including 3d printing, scanning, milling, and material handling. What used to take full factories and multiple levels of prototyping, we will be able to do with Persona on a single, streamlined platform. We are testing Persona's capability in the fields of advanced manufacturing, agriculture, renewable energy, and biomedical engineering.



OLT

Cura Design House: Compression Stockings



Venous Pooling is related to various diseases such as DVT, Orthostatic Hypotension and Varicose. Wearing compression stockings can help prevent those conditions, but due to the difficulty of use, a lot of patients suffer pain while trying to apply compression stockings or completely give up on compression stockings, simply because they're hard to put on (mainly due to the high amount of tension on the stockings). It is a prevalent problem among the elderly, young women, airline business travelers, and athletes. CDH has designed compression stockings that are as easy to put on as regular socks, but tighten appropriately at the push of a button.



In vitro select

Unfortunately, over 3 million couples each year suffer from infertility caused by genetics, age, or lifestyle choices. In vitro fertilization (IVF) enables these couples to rear their own children by fertilizing the egg outside of the body. It is an expensive procedure and is inefficient. On average, it takes three cycles for a successful pregnancy, costing over \$30,000. A large contributing factor is the DNA integrity of the sperm. In a normal adult, only 4% of a sperm sample is viable. Current methods to purify sperm for IVF don't account for many of these abnormalities and introduce DNA damage. Eggs that are fertilized with sperm with damaged DNA rarely survive after implantation in the uterus. We are developing a device that purifies sperm more safely, with higher specificity, and more naturally to increase the chance of a successful pregnancy with IVF. The IVF market is worth \$3.3 billion, and we believe we can obtain up to \$165 million of it.

Wheelchair Transportation

1.5 million people use manual wheelchairs in the United States. Unfortunately, most vehicles are not designed for wheelchair interfacing. Instead of modifying vehicles, most manual wheelchair users choose to transfer from their wheelchair into an un-modified vehicle. These repetitive transfers put wheelchair users and caregivers at risk of injury. Over 70% of manual wheelchair users experience overuse injuries that limit their independence. In addition causing injury, storing wheelchairs inside vehicles is time consuming and space intensive. We are designing a device to automatically store and un-store manual wheelchairs above or behind vehicles. This minimizes risk of injury and facilitates quick and space-efficient wheelchair storage. Our device interfaces with most manual wheelchairs and securely attaches to vehicles without requiring structural modifications. It also weighs less than 90 pounds and operates in less than 2 minutes.

A Better way to view Bedside Cystoscopy

Current bedside cystoscopy depends on a scope that must be looked through directly by the operator. This makes it uncomfortable to navigate, impossible for other physicians to see the image, and does not allow sharing of the images for later review or patient education. Cystoscopes are already designed to connect to a wired camera in the OR. We are designing a wireless camera that will reconstruct and broadcast the image to a monitory to directly solve this issue.

MRI Head Stabilization

Head movements during MRI lead to unusable images and longer procedures. We are creating adjustable, reusable, padded head stabilizers that dramatically improve newborn MR image quality and reduce time.

Water Out Of Thin Air (WOOTA)

780 million people worldwide lack access to clean water. The problem is two-fold: not only is the drinking water in many developing countries not suitable for human consumption, it is also incredibly difficult to obtain. It can take up to three miles (walking each way) for a resident of a village to reach adequate drinking water. While current solutions exist, they are often ineffective because they are expensive and impractical in undeveloped areas. One of the main problems is that existing solutions rely on the grid, which is unreliable or nonexistent in third world countries. In partnership with Engineering World Health, WOOA has developed a solution that is able to condense moisture from the air, thus providing a clean source of water. Condensing water provides a sanitary alternative to current solutions since condensation is free of contaminants commonly found in groundwater.