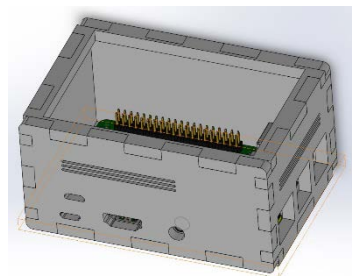
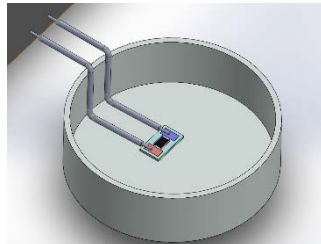
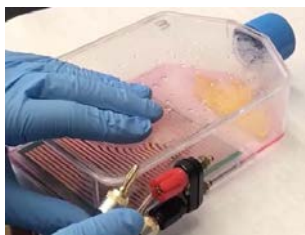
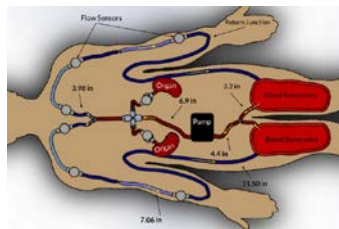
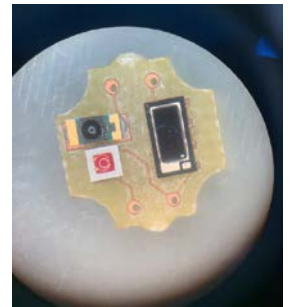
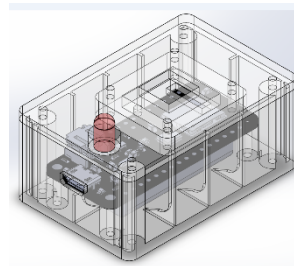
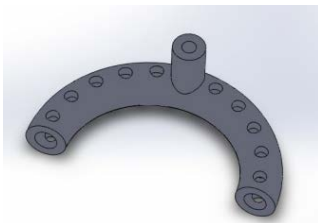
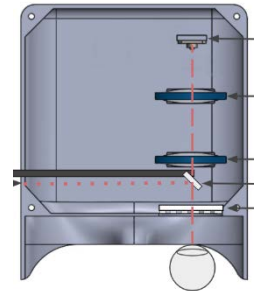
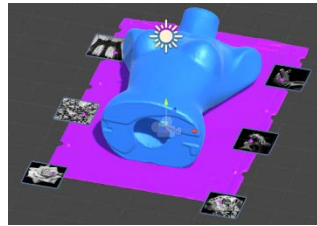


Senior Design Symposium
Saturday, June 8, 2019
GBSF 1005



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 - Department of Pharmacology

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- Department of Internal Medicine
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 - Orthopaedic Pediatrics
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- Department of Pediatrics
- Department of Radiation Oncology
- Department of Surgery
 - Plastic and Reconstructive Surgery

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Biomedical Engineering Senior Design Symposium

Saturday, June 8, 2019

8:00-8:30 **Setup**

8:30-8:50 **Breakfast/ Prototype Viewing and Demonstration**

8:50-9:00 **Welcome and Introduction (Dr. Choi)**

Session 1:

9:00-9:15 **VisuALL: A Patient-Operated Non-Mydriatic Retinal Imaging Device**

Team 18: Swetha Ganesan, Christopher Ito, Benjamin Lugten, Henry Mai, Laurel Wong

With VisuALL, diabetics can obtain more accessible eye screenings by personally, portably, and inexpensively capturing images of their own retina to send to an ophthalmologist for diagnosing potential retinopathies.

9:15-9:30 **SOLE Recovery: Lower extremity force monitor for rehabilitating orthopedics patients**

Team 7: Grace Jeng, Shane Jetton, Victor Chiu, Jordan Lee

Our lower extremity force monitor alerts rehabilitating patients if they are exceeding their weight bearing threshold in real-time.

9:30-9:45 **ARCS Tracheostomy Tube**

Team 3: Marina Raie, Tal Segal, Jotera Conway, Kia Aliakbar

ARCS is a tracheostomy tube that can apply continuous high pressure subglottic suctioning to remove secretions that incubate Ventilator Associated Pneumonia (VAP).

9:45-10:00 **ThoracosDummy: A Novel Chest Wall Simulator for Practicing Pneumothorax Procedures**

Team 10: Erica Ely, Zachary Jamison-Cash, Mohsin Naqvi, Tarik Siniora, Christopher Yabumoto

ThoracosDummy is a reusable, novel chest wall simulator that allows groups of around 20 residents to practice high-stakes thoracostomy procedures in a low-cost and low-stake environment.

10:00-10:15 **VascuSim: cardiovascular simulation system**

Team 5: Rachel Ibrahim, Shreeya Joshee, Alefia Kothambawala, Raffi Samurkashian, Kyle Van Housen

VascuSim is an implantable cardiovascular simulation system used to train medical personnel in the proper handling of traumatic wounds. The device allows for cannulation of major veins, customization of the severity of the traumatic injury, and real time blood loss monitoring.

10:15-10:45 **Break/ Prototype Viewing and Demonstration**

Session 2:

10:45-11:00 **SolarisUV: A Personalized Vitamin D Monitoring System**

Team 17: Sahiti Gajjala, Caitlyn Munch, Anthony Nguyen, Ningshen Feng, Emily Wong

SolarisUV is a wearable vitamin D monitoring system that continuously measures UV intensity and displays personal vitamin D production on a companion iOS phone application.

11:00-11:15 **EXIMUS: Nasal Drug Delivery Device for Status Epilepticus**

Team 16: Daniel Lin, Joseph Seiberling, Chuyao Wang

EXIMUS is a low-cost and portable nasal drug delivery device that non-professional caregivers can quickly learn and administer anti-epileptic drugs to status epilepticus patients at home.

11:15-11:30 **MISSD: Minimally Invasive Seizure Stopping Device**

Team 19: Morgan Bertsch, Hamad Linjawi, Makaela Rietman, Alexander Simileysky

The MISSD kit aims to provide caregivers and non-medically trained individuals with an easy to use, minimally invasive device to administer medication to effectively stop active seizures.

11:30-11:45 **RadAR: Radiotherapy Positioning with Augmented Reality**

Team 11: Janice Leung, Laura Oelsner, Priscilla Chan, Yuqing Huang

RadAR is an Augmented Reality (AR) software program created in collaboration with Varian Medical Systems that enables radiation therapists to accurately position cancer patients during radiation treatment. Using Microsoft HoloLens, a 3D holographic model of the patient's correct position and location is displayed onto the treatment couch.

By superimposing the patient with the holographic image, a therapist can accurately and efficiently align the patient during the treatment setup process.

11:45-12:00 **CoMet: Canine Measurement Frame**

Team 4: Madeleine Espejo, Kelly Aoyama, Youqi Sha, Zhuorui Li, Bo Zhang

CoMet is an all-encompassing device that measures body conformation in dogs, including joint angle, limb length and wither height, and can be used to help small-animal veterinarians diagnose and monitor dogs with various skeletal disorders, such as chondrodystrophy and intervertebral disc disease.

12:00-1:00 **Lunch/ Prototype Viewing and Demonstration**

Session 3:

1:00-1:15 **NeoVitalia: Pulse Oximeter Analyzer (POA)**

Team 2: Aravind Anand, Devi Jayakrishnan, Swathi Subramanian, Pranjali Vadlaputi

The POA is an additive device that digitizes the current newborn critical congenital heart disease (CCHD) screening process and provides statistically more significant readings of perfusion index, an indicative metric of cardiac systemic obstruction.

1:15-1:30 **Non-invasive Real-time Stem Cell Viability Monitoring Device**

Team 8: Weiting Ji, Benjamin Lee, Haihan Yu, Zexi (Jersey) Zang

We provide a proof of concept of a device that can measure stem cell viability in a non-invasive way so that the efficacy of the stem cell product after delivery to the hospital can be ensured.

1:30-1:45 **Cell Standard: A Cell Culture Monitoring System**

Team 12: Kenneth Alvarez, Vishal Harshal Patel, Johann Prambs, Jasmine Saini, and Osamu Yasui

Cell Standard non-invasively measures cell viability, and glucose and lactate concentrations in cell culture media to enable more rigorous standardization and quality control during cell culture.

1:45-2:00 **Osteotik: Improving Osteotomy Instrumentation**

Team 13: Lauren Gloekler, Justin Hardin, Richard Obregon, Kyra Smart, Sarah St. Clair

Osteotik has designed a compression/distraction instrument to facilitate superior osteotomies through compatibility with multiple commercially available bone plating systems.

2:00-2:30 **Break/ Prototype Viewing and Demonstration**

Session 4:

2:30-2:45 **EII-3D: Total Body Surface Area Estimation**

Team 1: Jesse Ahlquist, KJ Krause, Julia Loegering, Kevin Webb, Karen Xu

Our device allows clinicians to quickly and accurately estimate a patient's total body surface area through a combination of an equation indexing interface and 3D scanning.

2:45-3:00 **CoagID: Nuclear Magnetic Resonance (NMR) Measurement of Coagulation**

Team 6: Roland Calloway, Kyle Jacobs, Delaney Ridenour, Ryan Stager, Natalie Stucka

CoagID is an investigational device that uses NMR relaxometry to study blood coagulation and how sample agitation and temperature affect the coagulation process.

3:00-3:15 **miNIRS: A Near-Infrared Spectroscopy Device for Mice**

Team 9: Saeni Lele'a, Luke McKibbin, Kevin Nguyen, Brian Ton

miNIRS is a minimally invasive Near-Infrared Spectroscopy device to monitor blood oxygenation in the isocortex of awake and active mice.

3:15-3:30 **PERL: Protecting Erythrocytes by Removing Lipemia**

Team 14: Liangying Li, Vishal Manickam, Vasiliki Tasouli-Drakou, Lauren Uyesaka

PERL aims to quickly and effectively remove lipids from blood samples while reducing the chance of incurring hemolysis when compared to ultracentrifugation, the currently gold-standard method.

3:30-3:45 **Simulated GlucoSystem: Glucose Monitoring System for Simulation**

Team 15: Savannah Axume-Gamero, Yan Yi Chen, Kristopher Lebantino, Zulema Uribe, Nina Zabaneh

The Simulated GlucoSystem is a device that mimics measuring blood glucose levels in order to better educate physicians-in-training.

3:45-4:00 **Closing Remarks/ Wrap-up**