ASHWIN R. SAKHARE

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SUMMARY OF QUALIFICATIONS

North Carolina State University, Raleigh, NC
B.S. Degree in Biomedical Engineering, December 2009
Cumulative G.P.A.: 4.00

University of Southern California, Los Angeles, CA
PhD Student in Biomedical Engineering, August 2015 – Present
Cumulative G.P.A.: 3.92

RESEARCH EXPERIENCE

Graduate Student | University of Southern California, Los Angeles, CA | August 2015 – Present
(Principal Investigator: Dr. Judy Pa) – Primary focus of research is on developing an immersive VR game that assesses spatial navigation skills in older adults at risk for Alzheimer's Disease (AD)

- Assessed the feasibility of using PC-MRI to measure CSF and CBF flow dynamics to be used as a potential biomarker for brain health
- Assessed adverse effects associated with physical activity in an enriched, 3D immersive virtual environment in older adults
- Investigating the effects of simultaneous exercise and spatial navigation on physical function and brain health in older adults

Lab Rotation | University of Southern California, Los Angeles, CA | August 2015 – January 2016
(Principal Investigator: Dr. James Finley) – Primary focus of research was on using functional near infrared spectroscopy to investigate prefrontal cortex activation in participants with induced asymmetric gait on a split-belt treadmill

- Utilized Matlab to perform signal processing on data obtained from fNIRS equipment
- Used statistical parametric mapping to look for group differences in neural activation

Research Assistant | NC State University, Raleigh, NC | November 2008 – December 2009
(Principal Investigator: Dr. Elizabeth Loboa) - Responsible for improving a tensile strain bioreactor and performing experiments to study the effects of gene knockdown on signaling in primary cilia in stem cells

- Designed and prototyped a novel clamping mechanism for a tensile strain bioreactor
- Helped thaw, freeze, and culture stem cells
- Assisted with siRNA gene knockdown experiments on adipose-derived stem cells focused on osteogenic differentiation

Research Assistant | NC State University, Raleigh, NC | August 2007 – June 2009
(Principal Investigator: Dr. Greg Buckner) - Responsible for facilitating design improvements to an existing surgical tool used in spinal surgery

- Designed and fabricated an improved Kerrison Rongeur that implements vacuum-assisted suction to collect spinous processes in order to reduce surgery time and minimize the risk of infection
- Collaborated with an orthopedic surgeon and performed cadaver trials to evaluate efficacy of re-designed surgical tool

PROFESSIONAL EXPERIENCE

Systems Engineer | LipoScience, Raleigh, NC | July 2011 – June 2015
Responsible for troubleshooting and improving the Vantera Clinical Analyzer®, the world's first FDA-cleared in-vitro diagnostic instrument based on NMR technology

- Assembled and tested new components including fluidic tubing and servo drives to address hardware obsolescence
- Provided first-tier engineering support to Field Service Engineers to address instrument issues that occurred in the field
- Utilized Ishikawa diagrams and FMEAs to perform root cause and failure mode analysis
- Wrote engineering reports, investigation reports, and unit test reports

- Interfaced with external vendors to facilitate design improvements to instrument
- Created 3D CAD models using SolidWorks and printed prototypes using MakerBot 3D printer
- Utilized Excel and Analyse-It to perform data analysis and data mining in extensive clinical measurement databases

Software Test Technician | Code Refinery, Apex, NC | April 2010 – July 2011
Responsible for ad-hoc and formal testing of software used to control FDA-regulated in-vitro diagnostic instruments

- Identified software defects and executed formal test cases on Baxter's Tecan EVO Freedom robotic blood pooling instrument
- Performed ad-hoc and formal testing on LipoScience's Vantera Clinical Analyzer®
- Assisted in writing test cases, IQ, OQ, and other technical documents

R&D Engineer Intern | Cook Medical, Winston-Salem, NC | May 2008 – August 2008
Responsible for developing accessories for the endoscope in the N.O.T.E.S (Natural Orifice Transluminal Endoscopic Surgery) division at Cook Medical

- Developed and patented a locking mechanism for a tissue anchor delivery device that prevents premature deployment of the anchor during endoscopic procedures
- Implemented a user-friendly interface in DYADEM, a risk analysis program used for creating design FMEA documents

TEACHING EXPERIENCE

- Algebra II Honors Tutor | Raleigh Tutoring, Raleigh, NC | October 2012 - January 2013
- Algebra I Tutor | Raleigh, NC | January 2010 - June 2010
- Elementary School Tutor | Boys & Girls Club of America, Raleigh, NC | February 2010

SKILLS

- Proficient with SolidWorks and Pro-E for creating 3D models and drawings
- Advanced knowledge of the Unity3D game engine and extensive experience programming in C#
- Experience building circuits and programming in Arduino

TRAINING

Underwriter Laboratories | Raleigh, NC | July 15 - 17, 2014 | 19.5 Instructional Hours
Measurement, Control and Laboratory Use Equipment: Designing for Compliance to IEC 61010-1

Industrial Extension Service | NC State University | March 2013 - 2014 | 21 Instructional Hours
Design Failure Mode and Effects Analysis

Siemen's Application Training | Los Angeles, CA | May 16 – May 20, 2016 | 40 Instructional Hours
Training on use of Siemen's 3T Prisma MRI Machine

CITI and HIPAA Training | Los Angeles, CA | July 13, 2016 | 10 Instructional Hours
Training on responsible conduct of research and HIPAAA compliance

PATENTS

Sakhare, Ashwin. Surti, Vihar. 2010. Stylet Locking Mechanism for Medical Delivery Devices. U.S. Patent US20100168792 A1, filed December 30, 2008, and issued July 1, 2010.

HONORS / AWARDS / SCHOLARSHIPS

Degree Honors

- Summa Cum Laude

- Valedictorian
- Dean's List (9 semesters)

Research Awards
NCSU Biomedical Engineering Undergraduate Research Support (2008-2009)

Academic Honors
University Scholars Program (2006-2007)

Academic Scholarships
Nino and Judy Masnari Scholarship (2008-2009)
Viterbi PhD Graduate School Fellowship (2015-2016)

PRESENTATIONS

Sakhare AR; Yang V., Delev D., Tsang I., Ravichandran R., Pa J. *Nuts and Bolts: Designing a fully integrated VR bike*. USC Virtual Technologies for Health Symposium, Los Angeles, CA, September 2018. (Poster)

Sakhare AR; Yang V., Delev D., Tsang I., Ravichandran R., Pa J. *Combined cognitive and physical activity in VR to promote brain health*. USC Virtual Technologies for Health Symposium, Los Angeles, CA, September 2018. (Poster)

Sakhare AR; Isenberg AL, Pa J. *Association between physical activity and CSF flow dynamics*. Alzheimer's Association International Conference, Chicago, IL, July 2018. (Poster)

Sakhare AR; Isenberg AL, Pa J. *Assessing test-retest reliability of phase contrast MRI for measuring cerebrospinal fluid flow dynamics in Alzheimer's disease*. American Academy of Neurology, Los Angeles, CA, April 2018. (Poster)

Sakhare AR; Pa J. *Association between physical activity and CSF flow dynamics*. Grodins Research Symposium, Los Angeles, CA, April 2018. (Poster)

Sakhare AR; Isenberg AL, Pa J. *Assessing test-retest reliability of phase contrast MRI for measuring cerebrospinal fluid flow dynamics in Alzheimer's disease*. Finch AD Symposium, Los Angeles, CA, September 2017. (Talk)

Sakhare AR; Pa J. *Assessing test-retest reliability of phase contrast MRI for measuring cerebrospinal fluid and cerebral blood flow dynamics*. Grodins Research Symposium, Los Angeles, CA, April 2017. (Poster)

Sakhare AR; Pa J. *Associations between Alzheimer's Disease Risk Factors and Cognition Across the Lifespan*. Society for Neuroscience Conference, San Diego, CA, November 2016. (Poster)

Sakhare AR; Toga A; Pa J. *Alzheimer's Disease Risk Factor Score is Associated with Cognitive Performance and Brain Volume*. Grodins Research Symposium, Los Angeles, CA, April 2016. (Poster)

Sakhare A R; Pridgen B *O*. *Modification of a Kerrison Rongeur to Include Bone-Collection and Suction Capabilities*. Undergraduate Research Symposium, Raleigh, NC, July 2009. (Poster)

Sakhare A R; Haner R; Keim R; Knouse W; Morgan D. *Automated NMR Analyzer with Lab-temperature Normalization and Vibration Isolation: Environmental Effects on Measurement of Serum Lipoproteins*. AACC Annual Conference, Houston, TX, July 2013. (Poster)

Bodle, J C; Williams J M; Phillips, M E; SooHoo, J R; Sakhare, A R; Bernacki, S H; Loboa, E G. *Novel Tensile Strain Bioreactor for Analysis of Primary Cilia-Extracellular Matrix Interactions in Adipose-Derived Stem Cells*. TERMIS-NA 2011 Annual Conference, Houston, TX, December 2011 (Poster)

Bodle, J C; Sakhare, A R; Qi, J; Bernacki, S H; Banes, A J; Loboa, E G. *The Primary Cilium: A Receptor Mediator of Osteogenesis in Human Adipose Derived Stem Cells?* TERMIS-NA 2010 Annual Conference, Orlando, FL, December 2010. (Poster)

Bodle, J C; Sakhare, A R; Qi, J; Bernacki, S H; Banes, A J; Loboa, E G. *The Primary Cilium: A Potential Receptor Antenna in Human Adipose Stem Cells?* Biomedical Engineering Society Annual Meeting, Austin, TX, October 2010. (Podium)

Bodle J C; Sakhare A R; Vidt M E; SooHoo J R, Haslauer C M; McCulloch R C; Loboa E G. *Novel Tensile Strain Bioreactor for Culture of Three-Dimensional Tissue-Engineered Constructs*. Orthopedic Research Society Annual Meeting, New Orleans, LA, March 2010. (Poster)

Bodle J C; Sakhare A R; Qi J; Bernacki S H; Banes A J; Loboa E G. *Primary Cilia: Potential Mechanotransducers in Human Adipose Derived Stem Cells?* NCTERM Conference and Innovation Summit, Winston-Salem, NC, November 2009. (Poster)

Pridgen, BO.; Sakhare A R. *Modification of a Kerrison Rongeur to Include Bone-Collection and Suction Capabilities*. NCSU Summer Undergraduate Research Symposium, Raleigh, NC, July 2009. (Poster)

PUBLICATIONS

Sakhare, AR; Barisano G., Pa J., *Assessing test-retest reliability of phase contrast MRI for measuring cerebrospinal and cerebral blood flow dynamics*. Magn Reson Med. 2019; 82:658–670.

Sakhare, AR; Yang V., Stradford J., Tsang I., Ravichandran R., Pa J., *Cycling and Spatial Navigation in an Enriched, Immersive 3D Virtual Park Environment: A Feasibility Study in Younger and Older Adults*. Front. Aging Neurosci. 2019; 218.