

# Ashwin Sakhare

## Neuroengineer

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### Summary

**Neuroengineer** with an extensive background in clinical neuroscience, virtual reality, and neuroimaging. I have a passion for solving clinical problems through product development and actionable insights derived from data-driven approaches.

### Education

<b>University of Southern California</b> <i>PhD, Biomedical Engineering</i>	<b>May 2017 – April 2021</b> <i>Los Angeles, CA</i>
<b>University of Southern California</b> <i>M.S., Biomedical Engineering</i>	<b>Aug. 2015 – May 2017</b> <i>Los Angeles, CA</i>
<b>North Carolina State University</b> <i>B.S., Biomedical Engineering</i>	<b>Aug. 2005 – Dec. 2009</b> <i>Raleigh, NC</i>

### Select Coursework

- Applied Statistical Data Analysis
- Machine Learning for Data Science
- Signal and Systems Analysis
- Introduction to Clinical Medicine
- Pathophysiology of Nervous System
- Advanced Studies of the Nervous System

### Research Experience

<b>Doctoral Student</b> <i>Stevens Neuroimaging and Informatics Institute</i>	<b>May 2017 – Present</b> <i>Los Angeles, CA</i>
<ul style="list-style-type: none"><li>Validated the reliability of an MRI sequence to be used as a biomarker for brain health.</li><li>Developed a neuroimaging analysis tool to assess cerebral flow dynamics in the brain.</li><li>Developed a novel, immersive virtual reality game to remediate cognitive decline in older adults at risk for Alzheimer's disease.</li><li>Designed and manufactured a custom stationary exercise bike for older adults.</li><li>Trained a CNN to classify meningiomas tumors on MRI.</li></ul>	
<b>Research Assistant</b> <i>Cell Mechanics Research Laboratory</i>	<b>Nov. 2008 – Dec. 2009</b> <i>Raleigh, NC</i>
<ul style="list-style-type: none"><li>Developed a clamping mechanism to affix cell scaffolds in a bioreactor, allowing for the study of cells under cyclical tensile loads.</li></ul>	
<b>Research Assistant</b> <i>Electro-Mechanics Research Laboratory</i>	<b>Aug. 2007 – Dec. 2009</b> <i>Raleigh, NC</i>
<ul style="list-style-type: none"><li>Enhanced the design of a Kerrison Rongeur, a Laminectomy surgical instrument, to allow for the secure collection of bone chips, reducing procedural times and improving patient outcomes.</li></ul>	

### Work Experience

<b>Systems Engineer</b> <i>LipoScience</i>	<b>July 2011 – June 2015</b> <i>Raleigh, NC</i>
<ul style="list-style-type: none"><li>Managed design changes to Vantera, an FDA-cleared clinical blood analyzer, reducing downtime and improving sample throughput.</li></ul>	
<b>R&amp;D Engineer Intern</b> <i>Cook Medical</i>	<b>May 2008 – Aug. 2008</b> <i>Winston-Salem, NC</i>
<ul style="list-style-type: none"><li>Developed a novel locking mechanism for an endoscopic tissue fixation device, preventing premature deployment of a tissue anchor, reducing procedural times and the risk of contamination.</li></ul>	

## Core Skills

Virtual Reality	●●●●●
Neuroimaging	●●●●●
Clinical Neuroscience	●●●●●
Machine Learning	●●●●●
Data Science	●●●●●

## Technical Skills

C#	●●●●●
Python	●●●●●
SQL	●●●●●
Unity3D	●●●●●
SAS	●●●●●

## 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.

## Extracurricular Activities

USC Street Dance Society  
SMART-VR Student Ambassador

**Aug. 2015 – July 2016**  
**Nov. 2020 – April 2021**

## 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.  
July 2009. (Poster)

## 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; Lobo, 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; Lobo, 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; Lobo, 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; Lobo 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; Lobo 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)