ANDREW N. SIVAPRAKASAM

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EDUCATION

Indiana University School of Medicine *August 2018-Present*
MD/PhD Candidate *Indianapolis, IN*
Medical Scientist Training Program (MSTP)

Purdue University *April 2020-Present*
PhD Candidate, Biomedical Engineering *West Lafayette, IN*
Medical Scientist Training Program (MSTP)

University of Pittsburgh *August 2013-April 2018*
B.S.E. in Bioengineering *Pittsburgh, PA*
Minors: Computer Science, Chemistry
Magna Cum Laude

EXPERIENCE

Auditory Neurophysiology and Modeling & SNAP Laboratories May 2019 - Present
PhD Student— Advisors: Michael Heinz, PhD & Hari Bharadwaj, PhD *West Lafayette, IN*

· Applying various signal processing and data analysis techniques to investigate normal hearing and hearing disorders using translational and basic science approaches. Interested in pitch perception in sensorineural hearing loss and improving non-invasive assays to isolate the effects of cochlear anatomic impairments (IHC/OHC/cochlear synapse damage) that are undifferentiable using current clinical diagnostics.

EMG-Based Aid for Dysphagia Rehabilitation September 2021 - May 2022
Software Consultant— Lead Inventor: Georgia Malandraki, PhD *West Lafayette, IN*

· Refining a novel device to improve impaired deglutition after stroke or injury. Providing programming (C♯) expertise to translate swallowing EMG signal recordings into an intuitive, front-end patient interface.

Brainstem Neurophysiology Laboratory July 2018 - August 2018
Rotation Student — Advisor: Mark Sayles, MD, PhD *West Lafayette, IN*

· Observed methods used to record single-unit auditory nerve spikes at the Purdue Dept. of Speech, Language, & Hearing Sciences.

Human Engineering Research Laboratories (HERL) January 2016 - April 2018
Research Associate — Advisor: Alicia Koontz, PhD *Pittsburgh, PA*

· Assisted with study design, data analysis, and programming related to investigating wheelchair propulsion kinetics and kinematics using the Computer-Assisted Rehabilitation Environment (CAREN). Led SBIR Phase I development and testing of the *AgileLife Patient Transfer System*.

Orthopaedic Biodynamics Laboratory May 2014 - December 2015
Research Assistant — Advisor: Scott Tashman, PhD *Pittsburgh, PA*

· Studied knee joint biomechanics and cartilage morphology after ACL reconstruction using Dynamic Stereo X-ray, MRI, and CT image analysis techniques

PUBLICATIONS

1. F. Deloche, S. Parida, **A. Sivaprakasam**, M. Heinz,"Estimation of Cochlear Frequency Selectivity Using a Convolution Model of Forward-Masked Compound Action Potentials," bioRxiv 2022.04.15.487700; DOI: 10.1101/2022.04.15.487700

2. **A. Sivaprakasam**, H. Wang, R. Cooper, and A. Koontz,"Innovation in Transfer Assist Technologies for Persons with Severe Disabilities and Their Caregivers," IEEE Potentials, vol. 36, no. 1, pp. 34-41

SELECTED CONFERENCE PRESENTATIONS

Research Focus

1. **A. Sivaprakasam**, I. Schweinzger, H. Bharadwaj, M. Heinz, "Inner Hair Cell Damage and Cochlear Synaptopathy Differentially Impact Neural Envelope Coding of Modulations and Pitch," presented at the 9^{th} Midwest Auditory Research Conference, Ann Arbor, MI, 2022. (Platform)

2. F. Deloche, **A. Sivaprakasam**, M. Heinz, "Characterization of Cochlear Compressive Nonlinearities using Forward-Masked Compound Action Potentials," to be presented at the 19^{th} International Symposium on Hearing, Lyon, France, 2022. (Platform)

3. I. Schweinzger, **A. Sivaprakasam**, M. Heinz, "Differentiating Inner Hair Cell Dysfunction From Cochlear Synaptopathy Using Non-Invasive Measures of Temporal Envelope Coding in Chinchilla," presented (virtually) at the Association for Research in Otolaryngology 45^{th} Annual MidWinter Meeting, San Jose, CA, 2022.

4. F. Deloche, S. Parida, **A. Sivaprakasam**, M. Heinz, "Estimation of Cochlear Frequency Selectivity Using a Convolution Model of Forward-Masked Compound Action Potentials," presented (virtually) at the Association for Research in Otolaryngology 45^{th} Annual MidWinter Meeting, San Jose, CA, 2022. (Platform)

5. **A. Sivaprakasam**, H. Bharadwaj, M. Heinz, "The Role of Envelope and Temporal Fine Structure in Auditory Neural Coding of Timbre in Normal and Impaired Hearing," presented (virtually) at Neuroscience 2021, Chicago, IL, 2021.

6. **A. Sivaprakasam**, S. Bass, D. Kamaraj, and A. Koontz, "Investigating Wheelchair Seating Parameters and Their Effect on Ramp Propulsion," presented at the Biomedical Engineering Society 2017 Annual Meeting, Phoenix, AZ, 2017.

7. **A. Sivaprakasam**, R. Cooper, and A. Koontz, "Evaluation of the AgileLife Patient Transfer and Movement System," presented at the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) 2017, New Orleans, LA, 2017.

8. **A. Sivaprakasam**, J. Irrgang, F. Fu, and S. Tashman, "Contralateral Limb Differences in Knee Kinetics After Anterior Cruciate Ligament Reconstruction," presented at the Biomedical Engineering Society 2015 Annual Meeting, Tampa, FL, 2015. (Platform)

9. E. Thorhauer, K. Sass, **A. Sivaprakasam**, J. Irrgang, F. Fu, and S. Tashman, "Alterations in In Vivo Knee Cartilage Contact After Anterior Cruciate Ligament Reconstruction and Correlations to Clinical Outcomes," presented at the Orthopaedic Research Society 2015 Annual Meeting, Las Vegas, NV, 2015.

10. E. Thorhauer, K. Sass, **A. Sivaprakasam**, J. Irrgang, F. Fu, and S. Tashman, "Changes in Tibiofemoral Gait Kinematics Are Associated with Regional Cartilage Morphological Changes," presented at the Orthopaedic Research Society 2015 Annual Meeting, Las Vegas, NV, 2015.

11. R. OHara-Plotnik, E. Thorhauer, **A. Sivaprakasam**, J. Irrgang, F. Fu, and S. Tashman, "Gait Is a Poor Task Choice for Identifying Kinematic Deficits After ACL Reconstruction " presented at the Orthopaedic Research Society 2015 Annual Meeting, Las Vegas, NV, 2015.

Education and Innovation

1. Z. Guckien, A. Woloshuk, N. Patel, **A. Sivaprakasam**, A. Warrick, L. Garcia, "Advancing Innovation in Medicine: Expanding the Physician's Toolbox" presented (virtually) at IUSM Education Day, Indianapolis, IN, 2021. **Awarded Outstanding Abstract for Poster Presentation**
2. A. Woloshuk, **A. Sivaprakasam**, N. Patel, A. Warrick, A. Witten, L. Brennan, Z. Guckien, N. Diggins, L. Garcia, L. Wang, J. Acchiardo, J. Merrell, "A Prototype ECG for Neonatal Resuscitation," presented (virtually) at the IUSM Student Research Symposium, Indianapolis, IN, 2020: https://youtu.be/thIokzKTyOE

INVITED TALKS & WORKSHOPS

1. *Put the PRO in Programming.* **A. Sivaprakasam**, N. Patel, A. Petrucciani. Student-led Workshop. IU Medical Scientist Training Program Retreat 2021. July 10^{th}, 2021

GRANTS & FELLOWSHIPS

Purdue University

· Interdisciplinary Training in Auditory Neuroscience (1T32DC016853) Fellowship (2020-2022)

Indiana University

· Haselby Family Scholarship Recipient (2018-2020)

University of Pittsburgh

· Nominated (BioE Dept.) for the 2018 George Washington Prize
· Swanson School of Engineering Summer Research Internship 2017
· Swanson School of Engineering Summer Research Internship 2015

AWARDS & ACHIEVEMENTS

Academic

· Finalist for University of Pittsburgh *Co-op Student of the Year*

Other

· 1st place in age category, 2014 Charleston Distance Run 15 Miler
· 10th place or under in age category in 2013, 2014, 2015, and 2016 Pittsburgh 10 Mile races
· Raised $1200 for Children's Hospital of Pittsburgh, ran Pittsburgh Marathon 2016

TEACHING EXPERIENCE

University of Pittsburgh

· Teaching Assistant, HRS 2774 — Rehabilitation Biomechanics (Fall 2016)
· Teaching Assistant, BIOENG 1310 — Bioinstrumentation (Spring 2016 & 2017)

EXTRACURRICULAR INVOLVEMENT

Advancing Innovation in Medicine (AIM) Spring 2019-Present
Co-Founder *Indianapolis, IN*

· Student Interest Group (SIG) created with the purpose of educating medical students on the medical design process/prototyping
· Taught basic programming and CAD concepts using student-led design project

Auditory Neuroscience Association at Purdue (ANAP) Summer 2020-Present
President (2021-2022) | Vice President (2020-2021) *West Lafayette, IN*

· Group focused on peer discussion, networking, and mentoring for Purdue undergraduates, graduates, and post-doctoral trainees interested in auditory neuroscience
· Organized monthly talks, discussions, and social events

IUSM Combined Degree Student Council (CDSC) Fall 2019-Present
Class Representative *Indianapolis, IN*

· Convey class concerns and feedback to administration and assist with organizing annual MSTP retreat

IUSM Symphony Orchestra Fall 2019-Present
Violinist *Indianapolis, IN*

· Perform approximately twice per semester
· Continuing 15 consecutive years as an orchestral musician
· Currently on pause due to COVID restrictions

MENTORING EXPERIENCE

Fernando Aguilera de Alba, *Behavioral Comparison of Comodulation Masking Release (CMR) Between Chinchillas and Humans.* Summer 2020 (Co-Mentored)

LICENSURE & CERTIFICATION

USMLE Step 1 — Pass, June 2020

TECHNICAL STRENGTHS

Programming Literacy	Matlab, Java, HTML, Python, Android App Development
Adobe Creative Cloud	Lightroom, Illustrator, Photoshop
Motion Capture & Imaging Tools	Visual3D, Vicon Nexus, Mimics
Other Software	LabView, Solidworks