

BIOGRAPHICAL SKETCH

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NAME: SHRUTHI VENKATESH

eRA COMMONS USER NAME (credential, e.g., agency login): SHRUTHIVENKATESH

POSITION TITLE: TRAINEE

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE	START DATE MM/YYYY	END DATE MM/YYYY	FIELD OF STUDY
University of Pittsburgh (Pittsburgh, PA)	BS	08/2015	04/2019	Neuroscience, Psychology (Majors); Chemistry (Minor)
University of Pittsburgh School of Medicine (Pittsburgh, PA)	PhD	08/2022	04/2026 (anticipated)	Biomedical Informatics
University of Pittsburgh School of Medicine (Pittsburgh, PA)	MD	08/2020	04/2028 (anticipated)	Medicine

A. Personal Statement

In my freshman year, I pursued basic science research on psychosis in Alzheimer's disease (AD) in the lab of Dr. Robert Sweet at the University of Pittsburgh. This preliminary research experience allowed me to gain some exposure to basic science research and sparked my interest in the field of neurodegenerative diseases. Through my work with Dr. Thomas Mathew at St. John's Medical College Hospital in Bangalore, I was exposed to clinical research in neuroimmunology and neurodegeneration and sought opportunities to contribute further to this research area. During my junior year, I started conducting research with Dr. Zongqi Xia at the University of Pittsburgh on multiple sclerosis (MS). As an undergraduate student, I explored various aspects of clinical and translational research in the Xia Lab and completed my honors thesis. After graduation, I spent my gap year working as a clinical research assistant in the Xia Lab to expand upon my clinical research experience and knowledge of neurodegenerative diseases. During my gap year, I had the invaluable opportunity to explore the computational aspect of ongoing clinical research projects. Through analyzing data collected through longitudinal cohort studies of people with MS, I fell in love with clinical informatics research. Upon completion of my gap year, I matriculated at the University of Pittsburgh School of Medicine to develop my clinical and research interests further and realize my goal of becoming a physician-scientist. As a medical student, I continued to be involved with ongoing computational research efforts in the Xia Lab. I completed independent research projects focused on examining the impact of the COVID-19 pandemic on people with MS, investigating how the social networks of people with MS and control participants changed in response to the COVID-19 pandemic and understanding how comprehensive assessment of environmental factors can predict neurological disability in people with MS.

For my doctoral work, I hope to learn the development of novel analytical approaches and multimodal informatics-based research techniques that will enable us to derive important insights from the rapidly growing healthcare data sources with a focus on neurodegenerative diseases. To further explore my interest in the realm of neurodegenerative disease, I hope to expand my domain knowledge to include neurological diseases of aging. I will gain expertise in neurological diseases of aging by pursuing two independent but complementary research efforts. Firstly, given the challenging landscape of AD treatment, understanding the variance in disease trajectory and treatment response will allow for the rapid identification of promising treatment strategies and individualized tailoring of therapeutic approaches for people with AD. Secondly, with advances in disease modifying therapy for people with MS improving life expectancy, there is a critical need to address issues pertaining to aging in this population. I hope to investigate these critical questions by leveraging large-scale healthcare data warehouses to examine predictors of disease trajectory and treatment response in AD and MS through the development of computational models.

B. Positions, Scientific Appointments and Honors

Research Positions

ACTIVITY/ OCCUPATION	START DATE MM/YYYY	END DATE MM/YYYY	FIELD OF STUDY	INSTITUTION/ COMPANY	SUPERVISOR/ EMPLOYER
Undergraduate Student Researcher	11/2015	04/2016	Neuroscience	University of Pittsburgh	Robert Sweet, MD
Intern	05/2016	08/2016	Neurology	St. John's Medical College Hospital	Thomas Mathew, MD
	05/2017	08/2017			
Undergraduate Student Researcher	08/2017	06/2018	Neurology	University of Pittsburgh	Zongqi Xia, MD, PhD
Undergraduate Student Researcher	07/2018	12/2018	Cognitive Science	Macquarie University	Matthew Finkbeiner, PhD
Undergraduate Student Researcher	01/2019	04/2019	Neurology	University of Pittsburgh	Zongqi Xia, MD, PhD
Clinical Research Assistant	07/2019	07/2020			
Medical Student Researcher	08/2020	07/2022			
Medical Student Researcher	03/2021	05/2021	Ophthalmology	University of Pittsburgh	Jay Chhablani, MD
Medical Student Researcher	10/2020	05/2021	Internal Medicine and Psychiatry	University of Pittsburgh	Charles Jonassaint, PhD, MHS & Judith Morgan, PhD
PhD Student	08/2022	Present	Biomedical Informatics	University of Pittsburgh	Zongqi Xia, MD, PhD & Shyam Visweswaran, MD, PhD

Teaching Experience

ACTIVITY/ OCCUPATION	START DATE MM/YYYY	END DATE MM/YYYY	COURSE	INSTITUTION/ COMPANY
Undergraduate Teaching Assistant	08/2017	12/2017	Synaptic Transmission	University of Pittsburgh
Undergraduate Teaching Assistant	01/2019	04/2019	Functional Neuroanatomy Honors Laboratory	University of Pittsburgh
Educational Mentor	10/2015	04/2019	Pre-K – 5 th grade	Earthen Vessels Outreach, Pittsburgh PA

Other Experience

2022 – Present Member, MSTP Student Committee, University of Pittsburgh School of Medicine
2022 – Present Member, MSTP Workshop Committee, University of Pittsburgh School of Medicine
2022 – Present MSTP Student Representative, Faculty-Student Joint Leadership Team (JoLT), University of Pittsburgh School of Medicine
2022 – Present Mentor, Global Ties, University of Pittsburgh School of Medicine
2020 – Present Volunteer, Birmingham Free Clinic, University of Pittsburgh School of Medicine
2020 – Present Volunteer, Longitudinal Alliance Program, University of Pittsburgh School of Medicine
2020 – 2022 Coordinator, Interest Group in Neurology, University of Pittsburgh School of Medicine

2020 – 2022	Mentor, Giving a Boost, University of Pittsburgh School of Medicine
2020 – 2022	Mentor, Women in Healthcare, University of Pittsburgh School of Medicine
2020 – 2022	Mentor, Pitt Med Student Mentoring Alliance, University of Pittsburgh School of Medicine
2020 – 2022	Student Interviewer, University of Pittsburgh School of Medicine
2016 – 2019	Member, Nu Rho Psi National Honor Society in Neuroscience, University of Pittsburgh
2016 – 2019	Member, Outside the Classroom Curriculum Honor Society, University of Pittsburgh
2016 – 2018	Business Manager, National Residence Hall Honorary, University of Pittsburgh
2016 – 2018	Co-President, Project Potter (Harry Potter themed service organization), University of Pittsburgh
2016 – 2018	Co-Founder and Co-President, Billiards Club, University of Pittsburgh
2016 – 2018	Co-Founder and Vice-President, Sangeet (Indian classical music organization), University of Pittsburgh

Honors

2021	Jeannette South-Paul Award, University of Pittsburgh School of Medicine
2021	Scholarship, Consortium of Multiple Sclerosis Foundation
2021	Scholarship, Dean's Summer Research Project, University of Pittsburgh School of Medicine
2021	NHBLI Sickle Cell Challenge Honorable Mention
2019	Neuroscience Research Excellence Award, University of Pittsburgh
2019	Scholarship, Panthers Forward, University of Pittsburgh
2018	Scholarship, Dietrich Foundation, University of Pittsburgh
2018	Undergraduate Student Award for Cognitive Science, Macquarie University
2018	Scholarship, Pitt Advantage Grant, University of Pittsburgh

C. Contributions to Science

1. Psychosis in Alzheimer's disease

Alzheimer's Disease (AD) with psychosis is characterized by a distinct genotype and phenotype associated with rapid cognitive decline and increased caregiver burden. Reduction in the levels of kalirin (a protein involved in spine maintenance and growth) is associated with increased schizophrenia risk. During my freshman year, I conducted research with Dr. Robert Sweet in the Department of Psychiatry at the University of Pittsburgh focused on examining the molecular and behavioral manifestations of decreased kalirin expression in a mouse model of AD with psychosis (APP^{swe}/PSEN1^{dE9}). My role was to assist with behavioral (open field test, spontaneous alternation, acoustic startle response, radial arm water maze) and neuroanatomical testing (confocal microscopy) for this project.

2. Therapeutic considerations in neurodegenerative and neuroinflammatory disorders

During the summers of 2016 and 2017, I interned in the Department of Neurology at St. John's Medical College Hospital in Bangalore. I shadowed providers in both inpatient and outpatient settings, and actively participated in clinical research studies on novel therapies and techniques used to manage neurodegenerative and neuroimmunological disorders.

Publications

- i. Mathew T, Thomas K, K John S, **Venkatesh S**, et al. Effective Early Treatment of AChR Antibody-Positive Myasthenia Gravis with Rituximab; the Experience from a Neuroimmunology Clinic in a Developing Country. *J Cent Nerv Syst Dis*. 2021;13:11795735211016080. Published 2021 May 17. doi:10.1177/11795735211016080
 - ii. Mathew T, **Venkatesh S**, Srinivas M. The approach and management of bruxism in Alzheimer's disease: An under-recognized habit that concerns caregivers (innovative practice). *Dementia (London)*. 2020;19(2):461-463. doi:10.1177/1471301217694249
 - iii. Mathew T, Thomas K, Shivde S, **Venkatesh S**, Rockey SM. Post herpes zoster infection neuromyelitis optica spectrum disorder. *Mult Scler Relat Disord*. 2017;18:93-94. doi:10.1016/j.msard.2017.09.022
- ### 3. Factors influencing disease trajectory and response to disease-modifying therapy in people with multiple sclerosis
- Multiple sclerosis (MS) is a chronic autoimmune disease affecting the central nervous system associated with significant neurological disability. People with MS (pwMS) exhibit variable disease trajectory and treatment response. In 2017, Dr. Zongqi Xia and his team at the University of Pittsburgh launched a genotyped and deeply

phenotyped longitudinal prospective cohort of pwMS with the goal of developing a precision medicine-based approach for treatment of MS (NCT02994121).

During my senior year (2018-2019), I completed my honors thesis which focused on investigating the genetic and environmental risk factors and understanding the determinants of quality of life in pwMS. Upon graduation, I gained additional clinical research expertise through my role as a Clinical Research Assistant during my gap year (2019-2020). I continued to work on expanding my thesis research, contributed to an analysis of social networks in pwMS, and examined the impact of the COVID-19 pandemic on pwMS through the MS Resilience to COVID-19 (MSReCOV) collaborative (R01NS124882).

After matriculating to medical school at the University of Pittsburgh School of Medicine in 2020, I contributed to two main projects utilizing data from the MSReCOV collaborative. My first project focused on evaluating the changes in the personal networks of pwMS and control participants before and during the COVID-19 pandemic. In my second project, I assessed the impact of the exposome on subsequent neurological disability in pwMS.

Publications

- i. Boorgu K, **Venkatesh S**, Lakhani CM, Walker E, Aguerre I, Riley CS, Patel CJ, De Jager PL, Xia Z. Socioeconomic status and subsequent neurological outcomes in multiple sclerosis.
- ii. Chikersal P, **Venkatesh S**, Masown K, Walker E, Quraishi D, Dey A, Goel M, Xia Z. Predicting Multiple Sclerosis Outcomes during the COVID-19 Stay-at-Home Period using Passively Sensed Behaviors.
- iii. Levit E, Cohen I, Dahl M, Edwards K, Weinstock-Guttman B, Ishikawa T, Kavak K, Leavitt V, Nelson K, Onomichi K, Bar-Or A, Perrone C, Riley C, **Venkatesh S**, De Jager PL, Xia Z, Longbrake EE; Multiple Sclerosis Resilience to COVID-19 (MSReCOV) Collaborative. Worsening physical functioning in patients with neuroinflammatory disease during the COVID-19 pandemic. *Mult Scler Relat Disord*. 2022;58:103482. doi:10.1016/j.msard.2021.103482
- iv. Mani A, Santini T, Puppala R, Dahl M, **Venkatesh S**, et al. Applying deep learning to accelerated clinical brain magnetic resonance imaging for multiple sclerosis. *Front Neurol*. 2021;12:685276. doi:10.3389/fneur.2021.685276
- v. Levin SN*, **Venkatesh S***, Nelson KE, et al. Manifestations and impact of the COVID-19 pandemic in neuroinflammatory diseases. *Ann Clin Transl Neurol*. 2021;8(4):918-928. doi:10.1002/acn3.51314. *share co-first authorship
- vi. Levin SN, Riley CS, Dhand A, White CC, **Venkatesh S**, et al. Association of social network structure and physical function in patients with multiple sclerosis. *Neurology*. 2020;95(11):e1565-e1574. doi:10.1212/WNL.0000000000010460

Complete list of published work: <https://pubmed.ncbi.nlm.nih.gov/collections/62153972/?sort=pubdate>